
WOBBLING BACK TO THE FIRE: ECONOMIC EFFICIENCY AND THE CREATION OF A RETAIL MARKET FOR SET-TOP BOXES

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I. INTRODUCTION

As part of the sweeping Telecommunications Act of 1996, Congress directed the Federal Communications Commission (“FCC”) to adopt regulations “to assure the commercial availability ... of converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming ... from manufacturers, retailers, and other vendors”¹ Yet, despite considerable effort and at least one billion dollars spent to implement the agency’s “CableCard” regime,² the FCC repeatedly

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¹ Telecommunications Act of 1996, Pub. L. No. 104-104, § 304, 110 Stat. 56, 125-126 (1996) (codified at 47 U.S.C. § 549(a) (2006)).

² See discussion *infra* Part III.A; see, e.g., *In re Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, Notice of Inquiry, 25 F.C.C.R. 4275, 4301 (Apr. 21, 2010) (statement of Comm’r Baker) (“As we consider a long-term solution, I hope that we recall valuable lessons from the CableCARD regime. First, our technological mandates come with significant

concedes that its “efforts [to implement Section 629] to date have not led to a robustly competitive retail market for navigation devices that connect to subscription video services.”³ Indeed, only about one percent of navigation devices are purchased at retail.⁴ This profound lack of interest in such devices, which are available at big-box electronic stores, is a significant indictment of the agency’s implementation of Section 629. If the acquisition of set-top boxes in a commercial market had even moderate consumer interest, then it seems reasonable to assume that the share of the market for such devices would be higher than one percent.⁵

Frustrated by its billion-dollar policy dud, the FCC has recently expressed a renewed interest in Section 629.⁶ In its *National Broadband Plan*,⁷ and then in

costs. By one estimate, the cost of CableCARD compliance for the cable industry alone - costs passed on to cable consumers - has totaled nearly one billion dollars. Second, we should be careful not to mandate particular technological solutions that would freeze into place the current state of technology.” [hereinafter *AllVid NOI*] (citation omitted).

³ *Id.* ¶ 10; see also *In re Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*; Oceanic Time Warner Cable, a subsidiary of Time Warner Cable, Inc.; Oceanic Time Warner Cable, a division of Time Warner Cable, Inc., Oceanic Kauai Cable System; Oceanic Time Warner Cable, a division of Time Warner Cable, Inc., Oceanic Oahu Central Cable System; Cox Communications Inc., Fairfax County, Virginia Cable System; Cable One, Inc.’s Request for Waiver of Section 76.1204(a)(1) of the Commission’s Rules, *Third Report and Order and Order on Reconsideration*, 25 F.C.C.R. 14,657, ¶ 4 (Oct. 14, 2010) (“Unfortunately, the Commission’s efforts to date have not developed a vigorous competitive market for retail navigation devices that connect to subscription video services.”) [hereinafter *Commercial Availability III*]; FCC, *CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN 50* (2010), available at <http://comcomns.org/sCCj9m>. (“Despite Congressional and FCC intentions, CableCARDS have failed to stimulate a competitive retail market for set-top boxes.”) [hereinafter *NATIONAL BROADBAND PLAN*].

⁴ *Commercial Availability III*, *supra* note 3, ¶ 4.

⁵ Even when consumers have the option to buy rather than lease equipment (e.g., the cable broadband modem), the demand is low. See, e.g., Comment Sought on Video Device Innovation, NBP Public Notice #27, *Letter from National Cable & Telecomm. Ass’n*, GN Docket Nos. 09-47, 09-51, 09-137, CS Docket No. 97-80 (Dec. 4, 2009) (accessible via FCC Electronic Comment Filing System) [hereinafter *NBP Public Notice*].

⁶ Indeed, in the *National Broadband Plan*, the Commission expressed its exasperation about the failed CableCARD experiment, lamenting that a “national or global market with relatively low costs of entry, like that for many consumer electronics markets, should support more than two competitors [i.e., manufacturers of set-top boxes] over time.” *NATIONAL BROADBAND PLAN*, *supra* note 3, at 50. According to the Commission, this is because “[r]etail set-top boxes have been competing on an uneven playing field[]” that has “prompted some companies not to enter the market at all.” *Id.* at 51, 67 n.115 (citing a news article reporting on Steve Jobs’ reluctance to produce Apple TV as a set-top box with access to traditional TV content through MVPDs).

⁷ *Id.* at 36. (“The FCC should initiate a proceeding to ensure that all multichannel video programming distributors (MVPDs) install a gateway device or equivalent functionality in all new subscriber homes and in all homes requiring replacement set-top boxes, starting on or before Dec. 31, 2012.”).

a subsequent *Notice of Inquiry*,⁸ the FCC contemplates a “do-over” for Section 629, hoping that another hard-line regulatory approach will succeed where the CableCard paradigm has failed. The Commission’s new all video (“AllVid”) proposal envisions a regulation whereby the FCC would require multi-channel video programming distributors (“MVPDs”) “to provide a small, low-cost adapter that would connect to proprietary MVPD networks and would provide a common interface for connection to televisions, DVRs, and other smart video devices”⁹ According to the Commission, while this adapter “would perform the conditional access functions as well as tuning, reception, and upstream communication as directed by the smart video device”¹⁰ (e.g., an “AllVid Compatible” DVR, television, or home theater personal computer¹¹), the “adapter and the smart video device would communicate with each other using a standard interface, but each adapter would be system-specific to a particular MVPD in order to communicate with its network.”¹²

The AllVid approach should sound familiar. Conceptually, the scheme closely follows the CableCard idea in that AllVid is simply a proposal to separate conditional access from other features of the set-top box in the hopes of creating a retail market for the latter. There are, however, a few notable differences between AllVid and the CableCard. First, the FCC seeks to expand regulation coverage to include direct broadcast satellite (“DBS”) providers, which are presently excluded from the CableCard regulatory mandates.¹³ Consequently, the scope of the AllVid regulation is much more expansive and, therefore, will likely be more difficult to design, implement, and administer given the business models of the affected parties and the profound differences in their delivery technologies.¹⁴ Moreover, by applying Section 629 to the

⁸ *AllVid NOI*, *supra* note 2, ¶ 10 (“Although following adoption of the CableCARD rules some television manufacturers sold unidirectional digital cable-ready products (‘UDCPs’), most manufactures have abandoned the technology.”).

⁹ *Id.* ¶ 16.

¹⁰ *Id.*

¹¹ *Id.* at app. AllVid Concept Illustrations, 4293.

¹² *Id.* ¶ 16.

¹³ *In re Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices*, *Report and Order*, 13 F.C.C.R. 14,775, ¶ 64-65 (June 11, 1998) (“[W]e do not think that requiring DBS [“direct broadcast satellite”] service providers to separate security elements will serve the goal of enhanced competition in either the service or equipment markets.”) [hereinafter *Commercial Availability I*]

¹⁴ *AllVid NOI*, *supra* note 2, ¶ 12 (“[M]ost consumer electronics manufacturers acknowledge that an attempt to establish standards for navigation devices that would work with each of the different delivery technologies without some intermediation would be impractical and prohibitively expensive.”). Recently, the FCC used its Section 629 authority to expressly regulate both the price of equipment and video service. *Commercial Availability III*, *supra* note 3, ¶ 19 (“Accordingly, we also adopt a rule that requires cable operators to reduce the price of packages that include set-top box rentals by the cost of a set-top box rental for customers who use retail devices, and prohibits cable operators from assessing

DBS industry, the FCC would effectively impose new price regulation of equipment on satellite providers, thus widening the scope of price regulation in the communications industry.¹⁵ Finally, the Commission seeks not merely to make set-top boxes for MVPDs commercially available as mandated by the statute, but intends for AllVid-compatible devices to accommodate the services of non-MVPD sources, such as over-the-top video services.¹⁶

As is too often the case with bold Commission policy initiatives, the agency's aggressive attempt to implement Section 629 has proceeded entirely without any formal economic analysis of the nature of the service-equipment relationship in the MVPD market. In this paper, we attempt to remedy that shortcoming. Our findings are potentially significant in several respects.

First, in contrast to the common view that the self-supply model of set-top boxes is anticompetitive and anti-consumer, our theoretical analysis reveals that the set-top box conveys no market power to the MVPD, even if we assume that the provider of multichannel video services is a monopoly. Set-top boxes are necessary appendages (i.e., complements) to subscription video services and, as such, the provider can obtain all profits from the service itself.¹⁷

Second, our analysis indicates that the MVPD has no anticompetitive preference for self-supply. If the equipment can be produced more efficiently and sold at a lower price in a competitive retail market, then the provider will embrace such a market to the benefit of both provider and consumer. However, if the equipment can be sold at a lower price through self-supply, then the providers will prefer that option, which will also benefit both provider and consumer.

service fees on consumer-owned devices that are not imposed on leased devices. These price reductions must reflect the portion of the package price that is reasonably allocable to the device lease fee.”).

¹⁵ Telecommunications Act of 1996 § 304, 47 U.S.C. § 549(a) (2006) (“[R]egulations shall not prohibit any [MVPD] from also offering converter boxes . . . to consumers, if the system operator’s charges to consumers for such devices and equipment are separately stated and not subsidized by charges for any such service.”). Thus, under Section 629, firms do not have complete freedom to set prices for set-top equipment. *Id.*

¹⁶ *AllVid NOI*, *supra* note 2, ¶ 17 (“This approach would provide the necessary flexibility for consumer electronics manufacturers to develop new technologies, including combining MVPD content with over-the-top video services (such as videos offered from, for example, Amazon, Hulu, iTunes, or Netflix), manipulating the channel guide, providing more advanced parental controls, providing new user interfaces, and integrating with mobile devices.”).

¹⁷ See, e.g., *In re Video Device Competition: Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, *Reply Comments of the National Cable & Telecommunications Association*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67, at 2 (Aug. 12, 2010) (available via FCC Electronic Comment Filing System) (“[S]et-top boxes are an enabler of our core service, which is video, not equipment.”).

Third, this paper demonstrates that a government-directed commercial market for set-top boxes is unlikely to provide substantial gains in terms of lower costs, lower prices, or increased innovation. If the set-top box can be manufactured at a lower cost and sold at a lower price, then the MVPD will embrace the cost reduction, profits will rise, and consumers will benefit. Also, if innovation increases the value of set-top boxes to consumers, the MVPD is incentivized to implement that innovation. As a result, profits will be higher and consumers will be better off. Because the incentives to reduce prices and increase innovation remain intact, the prospects for a forced commercial market are slim. That is, where a commercial market produces lower costs and spurs innovation, the FCC will not need to mandate such a market because industry would welcome it.

When placed within an economic framework, the FCC's heavy-handed approach to Section 629 is largely misguided. It may truthfully be characterized as "[t]he burnt Fool's bandaged finger go[ing] wobbling back to the fire."¹⁸ History has shown that MVPDs prefer an efficient outcome, and since markets detest inefficiency, a heavy-handed regulatory approach to Section 629 is doomed to fail. Therefore, our simple economic analysis of set-top boxes—the first of its kind on this issue—encourages the FCC to substantially reorient its thinking on Section 629. The economics of the service-equipment relationship in multichannel video prescribes a light-touch approach for set-top boxes, one much different from the agency's oppressive AllVid (and CableCard) proposal.

So what is the FCC to do? If the existing market mechanism of self-supply for set-top boxes is, in fact, inefficient, then it is doubtful that either the Commission's recent modifications to the CableCard regime¹⁹ or its new AllVid proposal will produce a different result than that observed thus far.²⁰ Competition is evolving in video delivery without the technology-specific mandates of Section 629, and an efficient commercial market for set-top boxes will emerge without similar regulatory interference. An inefficient commercial market will not evolve naturally, but government action could create and sustain it. For the Commission's efforts to implement Section 629 to succeed, not only must policy change, but the fundamental economics of the service-equipment relationship in the multichannel video market must also change. This Article argues that, until the underlying economic reality changes, perhaps due to some technological innovation, the FCC's anticipated aggressive approach to Section 629 will likely keep the agency in "the Valley of Unattained Goals."²¹ Given

¹⁸ Rudyard Kipling, *The Gods of Copybook Maxims*, HARPER'S MONTHLY MAG., Jan. 1920, at 146.

¹⁹ *Commercial Availability III*, *supra* note 3, ¶ 13.

²⁰ *See, e.g., AllVid NOI*, *supra* note 2, at 4301 (statement of Comm'r Baker).

²¹ *Commercial Availability III*, *supra* note 3, at 14,711 (statement of Comm'r McDowell).

these economic realities, perhaps it is time for the Commission to develop a way to satisfy the requirements necessary to invoke the sunset provision of Section 629.²²

This Article proceeds in Part II with a brief summary of Section 629. Part III outlines the Commission's prior attempts to implement Section 629, discussing both the CableCard paradigm and the newly proposed AllVid regime. Part III then examines the arguments as to why the CableCard experiment failed, and why the agency believes a new AllVid regime is required. Next, Parts IV and V present an economic analysis of the problem and explain why past approaches to implement Section 629 were doomed to fail. In turn, Part VI sets forth fact-based legal and economic arguments to satisfy the sunset requirements of Section 629, should the Commission elect to go down that path. Finally, Section VII outlines conclusions and policy recommendations.

II. SECTION 629 OF THE TELECOMMUNICATIONS ACT

Section 629 was added to the Communications Act by way of the Telecommunications Act of 1996.²³ Congress, seeing that it was possible to have retail competition for telephone customer premises equipment, enacted Section 629 with similar aspirations for set-top boxes.²⁴ Specifically, Section 629 instructs the FCC to:

[A]dopt regulations to assure the commercial availability, to consumers of . . . equipment used . . . to access multichannel video programming and other services offered over multichannel video programming systems, from manufacturers, retailers, and other vendors not affiliated with any multichannel video programming distributor.²⁵

A plain reading of the statute implies that consumers should be able to purchase this equipment from sources other than the service provider.²⁶ Generally, MVPDs are not vertically integrated with manufacturers of set-top boxes, but they can purchase boxes from companies such as Motorola, Cisco, Samsung, Panasonic, and Pace.²⁷ Nonetheless, these boxes are typically designed to handle the particular needs of individual MVPDs and, consequently, cannot be shuttled across different MVPD platforms.²⁸

²² See 47 U.S.C. § 549(e).

²³ 47 U.S.C. § 549.

²⁴ *Commercial Availability I*, *supra* note 13, ¶ 11 (“The competitive market for consumer equipment in the telephone context provides the model of a market we have sought to emulate in this proceeding.”). See also *AllVid NOI*, *supra* note 2, ¶ 4.

²⁵ 47 U.S.C. § 549(a).

²⁶ *Commercial Availability I*, *supra* note 13, ¶ 1.

²⁷ *Id.* ¶ 99; Ralitza A. Grigorova-Minchev & Thomas W. Hazlett, *Policy-Induced Competition: The Case of Cable TV Set-Top Boxes*, 12 MINN. J.L. SCI. & TECH. 279, 297-98 (2011).

²⁸ *AllVid NOI*, *supra* note 2, ¶ 15.

Other restrictions in the statute are also helpful in determining Congress' intent with respect to the implementation of Section 629. First, in adopting such regulations, the FCC shall "consult[] with appropriate industry standard-setting organizations."²⁹ Second, the FCC cannot prohibit MVPDs from also offering equipment to their subscribers "if the system operator's charges to consumers for such devices and equipment are separately stated and not subsidized by charges for" multichannel video programming and other services.³⁰ Thus, by statute, MVPDs may be active participants in a retail set-top box market, though the prices charged for such equipment are subject to some regulatory limitations.³¹ The language of the Act suggests a minimum, cost-based price requirement. This interpretation will be addressed in further detail below.

The statute also authorizes the FCC to grant waivers under certain conditions,³² while providing some other limitations.³³ Sunset provisions permit the FCC to set aside entirely the equipment mandates if the following three conditions are met: (1) the MVPD market is "fully competitive;" (2) there is a "fully competitive" market for "converter boxes[] and interactive communications equipment;" and (3) the absence of the regulation will serve the public interest and encourage competition.³⁴ In the past, the agency has granted numerous Section 629 waivers³⁵ and found justification in the marketplace to exclude DBS distributors from its implementation mandates.³⁶

III. IMPLEMENTATION EFFORTS TO DATE

As the history of how the FCC initially sought to implement Section 629 is tortured and complex, this Part will provide only a brief history. Notably, the

²⁹ 47 U.S.C. § 549(a).

³⁰ *Id.*

³¹ Equipment may also be subject to regulation pursuant to Section 623 of the Act. *See* 47 U.S.C. § 543.

³² 47 U.S.C. § 549(c).

³³ *See, e.g.*, 47 U.S.C. § 549(d)(1).

³⁴ 47 U.S.C. § 549(e).

³⁵ *See, e.g.*, *In re* Cablevision Systems Corporation's Request For Waiver of Section 76.1204(a)(1) of the Commission's Rules; Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices, *Memorandum Opinion and Order*, 22 F.C.C.R. 220, ¶¶ 22-23 (Jan. 10, 2007) [hereinafter *January Waiver Requests*]; *In re* Consolidated Requests For Waiver of Section 76.1204(a)(1) of the Commission's Rules; Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices, *Memorandum Opinion and Order*, 22 F.C.C.R. 11780, ¶ 63 (June 29, 2007) [hereinafter *June Waiver Requests*]; *In re* Guam Cablevision, LLC; Request for Waiver of Section 76.1204(a)(1) of the Commission's Rules; Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices, *Memorandum Opinion and Order*, 22 F.C.C.R. 11747, ¶ 17 (June 29, 2007) [hereinafter *Guam Cablevision Memorandum*].

³⁶ *Commercial Availability I*, *supra* note 13, ¶ 64.

agency's CableCARD proposal has withstood numerous statutory challenges.³⁷

A. The Failed CableCARD Experiment

When the FCC first sought to implement Section 629, it had to reconcile the statutory goals of assuring the "commercial availability" of navigation devices with that of avoiding any major risks to content security.³⁸ The FCC reasoned that if it could somehow split a typical set-top box into two separate components—*i.e.*, the operational and functional components on one hand and the access control features on the other—it would be possible to have the first part available through retail outlets and the second part, containing the more sensitive access control apparatus, available only from the service provider (*i.e.*, the cable operator).³⁹ The FCC, noting the danger of "'detailed government standard setting,' left it to the cable industry and its national standard-setting organizations to develop the appropriate interfaces."⁴⁰ This interface eventually became the "CableCARD," which is a security device that, when inserted into either the television or set-top box, allows the consumer to view otherwise encrypted video.⁴¹

But the FCC went one step beyond simply instructing the industry to develop the CableCARD when it imposed an "integration ban," which required cable operators to cease the integration of the security function into set-top boxes leased to consumers.⁴² This ban effectively required the cable operators to use the CableCARD in all of their leased equipment.⁴³ While the cable in-

³⁷ See generally *Comcast Corp. v. FCC*, 526 F.3d 763, 769 (D.C. Cir. 2008) (holding that the FCC's denial of a waiver was not inconsistent with earlier waivers because "the allegedly inconsistent [earlier] waivers were all granted by the FCC's Media Bureau and were not appealed to the Commission."); *Charter Commc'ns, Inc. v. FCC*, 460 F.3d 31, 45 (D.C. Cir. 2006) (rejecting the cable industry's various challenges to the FCC's decision to retain the integration ban); *Gen. Instrument Corp. v. FCC*, 213 F.3d 724, 730 (D.C. Cir. 2000) (overcoming the National Cable Television Association's ("NCTA") argument that the integration ban is "squarely foreclosed" by the language of Section 629).

³⁸ *In re Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices, Notice of Proposed Rulemaking*, 12 F.C.C.R. 5639, ¶ 1 (Feb. 11, 1997) [hereinafter *Commercial Availability NPRM*]; 47 U.S.C. § 549(a)-(b) ("The [FCC] shall not prescribe regulations . . . which would jeopardize security of multichannel video programming and other services."); see also *Gen. Instrument Corp.*, 213 F.3d at 728-29 (discussing the Congressional mandate directing the FCC to balance commercial availability with security).

³⁹ *Commercial Availability NPRM*, *supra* note 38, ¶ 34.

⁴⁰ *Commercial Availability I*, *supra* note 13, ¶ 75; see also *Gen. Instrument Corp.*, 213 F.3d at 728.

⁴¹ *AllVid NOI*, *supra* note 2, ¶ 7; see also *Gen. Instrument Corp.*, 213 F.3d at 728 (discussing the history leading up to the establishment of the CableCARD).

⁴² *AllVid NOI*, *supra* note 2, ¶ 7; *Commercial Availability I*, *supra* note 13, ¶ 69.

⁴³ *AllVid NOI*, *supra* note 2, ¶ 7.

dustry fought the integration ban on multiple grounds in court, the FCC prevailed each time.⁴⁴

Although space constraints prevent a detailed exegesis of every legal argument raised in these cases, of particular interest (and germane to the analysis presented here) is the FCC's economic rationale supporting the integration ban. Specifically, the Commission argued that, although the integration ban may impose short-term costs (*i.e.*, *higher prices* for non-integrated set-top boxes), long-term benefits "likely to flow from a more competitive and open supply market" would outweigh them.⁴⁵ Such benefits include the "potential savings to consumers from greater choice among navigation devices" . . . the spurring of technological innovations," and the equally amorphous argument that "Congress regarded the commercial availability of navigation devices from independent sources as a benefit in and of itself."⁴⁶ Rather than test the veracity of the FCC's cost-benefit analysis, however, the D.C. Circuit has repeatedly deferred to the agency's expertise.⁴⁷

Yet, by the FCC's own admission, the hard truth is that the CableCARD experiment achieved neither the Commission's original goal of developing a "competitive market for retail navigation devices," nor Congress' intent of Section 629.⁴⁸ According to the FCC, most cable subscribers continue to use

⁴⁴ *Comcast Corp. v. FCC*, 526 F.3d 763, 770 (D.C. Cir. 2008) ("we reject Comcast's argument that the Commission's denial of its waiver request was discriminatory or inconsistent with prior FCC policies."); *Charter Commc'ns, Inc. v. FCC*, 460 F.3d 31, 41 (D.C. Cir. 2006) (holding that the Commission reasonably concluded that "[i]f cable operators 'must take steps to support their own compliant equipment, it seems far more likely that they will continue to support and take into account the need to support services that will work with independently supplied and purchased equipment.'" (citation omitted); *Gen. Instrument Corp.*, 213 F.3d at 730 (accepting as reasonable the Commission's construction of the term "converter boxes" as not including "integrated converter boxes," thereby rejecting NCTA's argument that the statute precluded the integration).

⁴⁵ *In re Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, *Second Report and Order*, 20 F.C.C.R., ¶ 29 (Mar. 17, 2005) [hereinafter *Commercial Availability II*].

⁴⁶ *Charter Commc'ns, Inc.*, 460 F.3d at 42 (citations omitted) (quoting *Commercial Availability II*, *supra* note 45, ¶ 29).

⁴⁷ *See, e.g., Comcast Corp.*, 526 F.3d at 767; *Charter Commc'ns, Inc.*, 460 F.3d at 42. Comcast's argument in support of a waiver under [S]ection 629(c) primarily turns on cost concerns—the company argues that if non-integrated digital [converter] boxes become more expensive, then fewer customers will migrate to digital cable. But from the start, the FCC has conceded that the integration ban may impose short-term costs on cable companies and consumers. It reasoned, however, that those costs "should be counterbalanced to a significant extent by the benefits likely to flow from a more competitive and open supply market," such as lower prices, more choices, and the spurring of technological innovation. We affirmed that determination . . . and we may not revisit that conclusion here even if we wished to—which we do not.

Comcast Corp., 526 F.3d at 767 (citations omitted).

⁴⁸ *Commercial Availability III*, *supra* note 3, ¶ 4; S. REP. NO. 104-230, at 1, 181 (1996) (Conf. Rep.).

the traditional set-top boxes leased from their cable operator; only one percent of the total navigation devices that are deployed are purchased at retail.⁴⁹ Thus, as the FCC concedes, this “evidence indicates that many retail device manufacturers abandoned CableCARD before any substantial benefits of the integration ban could be realized.”⁵⁰ In other words, the FCC’s predicted gains in terms of prices and innovation from the CableCARD regime never arrived. In addition to the unrealized gains, FCC Commissioner Meredith Baker recognized that the costs of CableCARD compliance are estimated to be one billion dollars.⁵¹ The cost-benefit outcome of the CableCARD is decidedly, and admittedly, unfavorable.

B. So Why Did CableCARD Fail? The Commission’s Responses

As noted above, most observers — including the FCC — consider the CableCARD regime to be a failure. Undeterred, however, the Commission not only recently made tweaks to its existing CableCARD regime,⁵² but it also wants to move on to a successor regime, “AllVid.”⁵³ In the following three sections, we explore the FCC’s explanations for why CableCARD failed and, equally as important, what steps the agency believes will be necessary to remedy the problem. In Section IV, we provide an economic explanation for the failure of CableCARD.

1. The Third Report

Concurrent with its introduction of the proposed AllVid approach, the Commission recently sought to modify its failed CableCARD regime.⁵⁴ While the Commission stated that it was “sympathetic” to concerns that it was seeking another bite at the CableCARD apple, while simultaneously proposing the AllVid regime, the agency believed it necessary to proceed on both tracks because “CableCARD is a realized technology” and “consumer electronics manufacturers can build to and are building to the standard today.”⁵⁵ To this end, the Commission instituted five reforms to the CableCARD regime that, it hoped, would get the process back on track and produce a competitive retail

⁴⁹ *Commercial Availability III*, *supra* note 3, ¶ 4.

⁵⁰ *Id.* ¶ 4; *see also AllVid NOI*, *supra* note 2, ¶ 10 (referring to the CableCARD, the FCC declared, “most manufactures [sic] have abandoned the technology”).

⁵¹ *AllVid NOI*, *supra* note 2, at 4301-02 (Baker, Comm’r, concurring).

⁵² *Commercial Availability III*, *supra* note 3, ¶ 8.

⁵³ *Id.* ¶ 11.

⁵⁴ *Id.* ¶ 8.

⁵⁵ *Id.*

market as contemplated by Section 629.⁵⁶

The first step the Commission took was to require cable operators to provide retail devices with access to switched-digital channels (although it did so without specifying the technology that cable operators must use to ensure such compatibility).⁵⁷ In the Commission's view, subscribers "must be able to use the devices they purchase at retail to access all of the linear channels that comprise the cable package they purchase."⁵⁸ Thus, reasoned the Commission, "[p]roviding retail navigation devices and leased navigation devices with equivalent access to linear programming at an equivalent service price is essential to a retail market for navigation devices."⁵⁹

Next, the Commission adopted a requirement that "cable operators prominently list the fee for their CableCARDS as a line item on their websites (readily accessible to all members of the public) and annual rate cards separate from their host devices, and provide such information orally or in writing at a subscriber's request."⁶⁰ Moreover, the Commission ordered that these CableCARD lease fees be uniform across a cable system regardless of whether the CableCARD is used in a leased set-top box or a navigation device purchased at retail.⁶¹ Finally, the Commission was "not convinced" that "cable operators [we]re not subsidizing the costs of leased set-top boxes with service fees."⁶² As a result, the Commission adopted a rule requiring cable operators to reduce the prices of packages that include set-top box rentals by the cost of a set-top box rental for customers who use retail devices, and prohibiting cable operators from assessing service fees on consumer-owned devices that are not imposed on leased devices.⁶³ According to the Commission, these price reductions must reflect the portion of the package price that is "reasonably allocable" to the device lease fee.⁶⁴

Third, the Commission ruled that "the best means of assuring the development of a retail market for navigation devices is to require cable operators to allow subscribers to self-install CableCARDS."⁶⁵ In addition, the Commission made it easier for consumers to file complaints with the Commission, citing examples in the record where consumers had to schedule multiple appointments with the cable company to install a CableCARD purchased from a third-

⁵⁶ *Id.*

⁵⁷ *Id.* ¶ 13.

⁵⁸ *Id.* ¶ 14.

⁵⁹ *Id.*

⁶⁰ *Id.* ¶ 19.

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.* ¶ 26.

party retail outlet.⁶⁶ In the Commission's view, the "need to schedule multiple installation appointments unquestionably is an impediment to realizing a competitive retail market for navigation devices" and, as such, believed that "Congress's intent in adopting Section 629 was to ensure that cable operators treat retail navigation devices in the same manner that they treat leased navigation devices."⁶⁷

Fourth, the Commission mandated that cable operators provide multi-stream CableCARD by default, unless a subscriber expressly requests a single-stream CableCARD.⁶⁸ In the Commission's view, such a requirement will ensure the development of a retail market for navigation devices in that such a mandate "will conform more closely with the concept of common reliance, provide improved customer experience, and impose little, if any, costs on the industry."⁶⁹

Fifth, the Commission took steps to update and streamline CableCARD device certification. In particular, the Commission both modified its rules to reflect updated testing procedures and formally prohibited "CableLabs or other qualified testing facilities from refusing to certify [Unidirectional Digital Cable Products] for any reason other than a failure to comply with the conformance checklists referenced"⁷⁰ under current rules. However, the Commission observed that these rule changes did little more than codify the certification process as it exists today.⁷¹

Notably, all the FCC's actions appear to view the CableCARD's failure as a result of limitations in its operational parameters. Never has the agency considered that its proposals are being impeded by the underlying economics of the equipment-service relationship in multichannel video markets. This omission is important. If CableCARD's defects lie in its inherent inefficiency relative to self-supply, then solving the problems outlined by the FCC will not produce a successful alternative to the CableCARD of the past. The theoretical analysis, *infra*, indicates that even if the commercially- and self-supplied set-top boxes are identical, the commercial model may be relatively inefficient, imposing significant implementation costs without any offsetting benefits. Moreover, if changes to the CableCARD regime, or adoption of the proposed AllVid approach, cannot resolve the operational defects identified, then failure of AllVid is near certain as the regulatory approach is burdened with both inefficiency and operational shortfalls. In fact, with rapidly evolving technology, it

⁶⁶ *Id.* ¶ 28.

⁶⁷ *Id.* ¶ 29.

⁶⁸ *Id.* ¶ 33. A multi-stream cable card permits multiple channels to be decoded, permitting, for example, a DVR to record one channel while another channel is being watched. *Id.* ¶ 30.

⁶⁹ *Id.* ¶ 33.

⁷⁰ *Id.* ¶ 37.

⁷¹ *Id.*

is possible that the principle defect in CableCARD and AllVid is the mere act of defining the device, in that by defining the device the FCC locks in a technological standard that will soon be outdated.

2. *The AllVid NOI*

In the FCC's *AllVid NOI*, the agency takes a slightly different approach to explain why CableCARD failed and why the AllVid approach is required. According to the Commission, the "limited interest in purchasing retail devices that can access MVPD services" is attributable to "two fundamental defects."⁷² First, the Commission believes that "with few exceptions retail navigation devices are unable to provide functionality beyond that available in devices that subscribers can lease from their providers and often are unable to access many of the MVPD services that leased set-top devices are able to access."⁷³ Second, the Commission believes that "as a general matter a retail navigation device purchased for use with one MVPD's services cannot be used with the services of a competing MVPD."⁷⁴ Again, both explanations for the CableCARD's failure are operational characteristics of the device. Notably, the FCC provides no explanation as to why its AllVid mandate will successfully resolve these operational defects or, more importantly, how AllVid is more future-proof than the CableCARD. Moreover, the FCC has yet to consider the possibility that the failure of the CableCARD may be the consequence of powerful and legitimate economic forces working against its success.

To remedy these alleged defects, the FCC chose to dig in rather than reconsider; that is, the agency proposes merely to amplify the CableCARD to remedy its operational shortcomings. This leads the agency to the AllVid approach, which seeks to:

[P]lace the network-specific functions such as conditional access, provisioning, reception, and decoding of the signal in one small, inexpensive operator-provided adapter, which could be either (i) a set-back device—which today could be as small as a deck of cards—that attaches to the back of a consumer's television set or set-top box, or (ii) a home gateway device that routes MVPD content throughout a subscriber's home network. The adapter would act as a conduit to connect proprietary MVPD networks with navigation devices, TV sets, and a broad range of other equipment in the home. The AllVid adapter would communicate over open standards widely used in home communications protocols, as outlined below, enabling consumers to select and access content through navigation devices of their choosing purchased in a competitive retail market. MVPDs would, of course, be free to participate in the retail market by offering navigation devices for sale or lease to consumers, but those devices would be separate from the adapter and marketed separately.⁷⁵

⁷² *AllVid NOI*, *supra* note 2, ¶ 15.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.* ¶ 22.

The AllVid adapter is conceptually identical to the CableCARD in that its primary purpose is to separate conditional access from the other functions of the set-top box. As such, the FCC's general approach to Section 629 is largely unchanged by AllVid. Unfortunately, although the FCC again promises that AllVid will be different and that a vibrant and innovative retail market is just around the corner,⁷⁶ there is no compelling evidence that AllVid will succeed where the CableCARD has failed. As we show *infra*, the economic factors that killed the CableCARD are likewise working against the FCC's aggressive AllVid approach, so that AllVid is likely to follow the same path to costly failure. With rapidly evolving technology, success is unlikely for any regulation that, by its very nature, locks in a particular technology. Of this, the CableCARD is an archetype.

3. Other Explanations for CableCARD's Failure

Notwithstanding the preceding two sections, the Commission has in various other forums also set forth one other explanation for the failure to realize the goals of Section 629: MVPD foot-dragging. For example in the *AllVid NOI*, the Commission specifically stated that it wants to create a regime wherein device manufacturers are encouraged "to develop and introduce innovative smart video devices *without being deterred by the need to consult with MVPDs.*"⁷⁷ FCC Commissioner Michael Copps echoed a similar sentiment in his statement to the *AllVid NOI*, arguing:

The path to the retail market has been, for many reasons, obstructed at nearly every turn. Something is clearly not working as intended when consumers encounter such disparities between the cost, installation and support of CableCARD devices for those who purchase a retail device and for those leasing the cable provider's set-top box.⁷⁸

And Commissioner Mignon Clyburn apparently holds a similar view, noting:

The time has undoubtedly arrived for us to examine the potential for *any* electronics manufacturer to offer smart video devices at retail that can be used with the services of *any* MVPD. In addition, given that the current process for obtaining MVPD certification is so cumbersome and expensive, I am eager to explore ways in which such manufacturers can forego unnecessary coordination and negotiation with MVPDs.⁷⁹

The sentiment that the cable industry intentionally sabotaged CableCard is

⁷⁶ *Id.* The Commission specifically states that the new AllVid model will, *inter alia*, "spur the development of a competitive retail market in navigation devices, thus providing subscribers with viable alternatives to leasing or buying a set-top box from their MVPD" and "drive down retail prices for devices used to access MVPD services without increasing the prices of those services." *Id.* ¶ 23.

⁷⁷ *Id.* ¶ 23 (emphasis added).

⁷⁸ *Id.* at 4296 (statement of Comm'r Copps).

⁷⁹ *Id.* at 4300 (statement of Comm'r Clyburn).

widely held. For example, the left-leaning political interest group Free Press claims that the “cable industry played a prominent role in impeding the potential success of CableCard, a fact often brought to the Commission’s attention.”⁸⁰ Similarly, Professor Marvin Ammori, former General Counsel of the Free Press, argues that CableCard failed because MVPDs “generate huge fees from renting these boxes because they dominate the market for them and have made it difficult for consumers to purchase boxes from any independent company.”⁸¹ Likewise, Public Knowledge argues that the failure of CableCard was not “technical or economic, but behavioral” because “MVPDs have consistently attempted to keep ‘foreign devices’ from their networks.”⁸² And, not to be left out, Pennsylvania State Professor Rob Frieden argues that, “Cable operators have largely thwarted the Congressional mandate to give consumers alternatives to the operator-leased devices.”⁸³

Such views of the matter are questionable in many respects. First, the FCC mostly regulates the prices of the set-top box at cost.⁸⁴ Furthermore, the agency seems more concerned that equipment prices are subsidized rather than marked up well above costs.⁸⁵ Therefore, the “huge fees” point is invalid to the extent that it possesses a market power connotation. Second, there is neither evidence nor argument supporting the notion that the set-top box offers any increase in market power to the cable industry.⁸⁶ As such, there is no reason to suspect that the industry’s behavior with respect to the set-top box is either anticompetitive or anti-consumer. Third, to the extent that the industry has impeded the CableCard’s development, such efforts may be driven by legitimate business and social concerns. Indeed, the FCC freely admitted that the CableCard regime

⁸⁰ *In re Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, *Comments of Free Press*, MB Docket No. 10-91; CS Docket No. 97-80; PP Docket No. 00-67, at 3 (July 13, 2010) (accessible via FCC Electronic Comment Filing System).

⁸¹ Marvin Ammori, *Copyright’s Latest Communications Policy: Content-Lock-Out and Compulsory Licensing for Internet Television*, 18 COMM.LAW CONSP. 375, 388 (2010).

⁸² *In re Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, *Comments of Pub. Knowledge & New American Found.*, MB Docket No. 10-91; CS Docket No. 97-80; PP Docket No. 00-67, at 6 (July 13, 2010) (accessible via FCC Electronic Comment Filing System) (citing JONATHAN E. NUECHTERLEIN & PHILIP J. WEISER, *DIGITAL CROSSROADS: AMERICAN TELECOMMUNICATIONS POLICY IN THE INTERNET AGE* 57-58 (2005)).

⁸³ Rob Frieden, *Lock Down on the Third Screen: How Wireless Carriers Evade Regulation of Their Video Services*, 24 BERKELEY TECH. L.J. 819, 834 (2009).

⁸⁴ *Commercial Availability I*, *supra* note 13, ¶ 88 (the Commission noted that Congress, in Section 623(b)(3), made clear that equipment used to deliver regulated services must be priced to the consumer at cost).

⁸⁵ *Id.* ¶¶ 85-87.

⁸⁶ See discussion *infra* Part V Section A.

might lead to higher costs and prices for equipment.⁸⁷ Under this “foot dragging” theory, a legitimate question to contemplate is whether the industry should be condemned for impeding the CableCard or whether the FCC should be condemned for mandating it. The answer lies in the relative efficiency of self-supply to regulatory-induced commercial supply, and whether the incentives of the MVPDs in this regard can be trusted. These questions will be addressed in the following text.

IV. THE ECONOMICS OF THE SET-TOP BOX

Multichannel video providers, such as cable and satellite television operators, are in the business of selling subscriptions to multichannel video services.⁸⁸ In most cases, these services require that a piece of equipment, a set-top box, be located at the consumer’s home or business. The primary purpose of this box is to convert the video signal (in some cases a scrambled signal for security) to a standardized output accepted by consumer premises equipment (*i.e.*, television sets); the boxes are also used to order and provision video-on-demand, display channel guides, and some other features. These set-top boxes are manufactured by consumer electronics manufacturers (*e.g.*, Pace, Cisco, Motorola, Arris, and so forth) and acquired by consumers from their chosen MVPD. MVPDs are not vertically integrated into the manufacturing of such equipment.⁸⁹ A monthly fee for the box (about \$7-10 per month), which typically includes an “insurance” service as well, since defective equipment is typically replaced without fee, is charged for the box.⁹⁰ Thus, this “insurance”

⁸⁷ *Commercial Availability III*, *supra* note 3, ¶ 4.

⁸⁸ DirecTV, Annual Report (Form 10-K), 3 (Feb. 25, 2010) (accessible via SEC Electronic Filing System) (“We are a leading provider of digital television entertainment in the United States and Latin America. Our two continuing business segments, DIRECTV U.S. and DIRECTV Latin America, which are differentiated by their geographic location, are engaged in acquiring, promoting, selling and/or distributing digital entertainment programming via satellite to residential and commercial subscribers”); Comcast Corp., Annual Report (Form 10-K), 1 (Feb. 23, 2010) (accessible via SEC Electronic Filing System) (“We are a leading provider of video, high-speed Internet and phone services (‘cable services’), offering a variety of entertainment, information and communications services to residential and commercial customers”) [hereinafter Comcast, Annual Report].

⁸⁹ However, it is worth noting that today most DBS-related equipment is MVPD branded. *See Competition and Consumer Choice in the MVPD Marketplace, Including an Examination of Proposals to Expand Consumer Choice, such as A La Carte and Theme-Tiered Offerings: Hearing Before the H. Subcomm. on Telecomm. and the Internet of the H. Comm. on Energy and Commerce*, 108th Cong. 2 (2004) (statement of Rep. Fred Upton, Chairman, Subcomm. on Telecomm. and the Internet), available at <http://commcns.org/U45Cao>.

⁹⁰ *AllVid NOI*, *supra* note 2, ¶ 13. *See also* DIRECTV, <http://commcns.org/Vrnn3D> (last visited Nov. 10, 2012); DISH, <http://commcns.org/10hm1w8> (last visited Nov. 10, 2012). By comparison, wireless companies typically charge a \$4.99 monthly premium for replacement

service provided by the MVPD is valuable. For cable operators, the prices are regulated to (some measure of) cost plus a return of 11.25 percent.⁹¹

In this section, we consider the economic incentives of a multichannel video provider with regard to the set-top box, and discuss how such incentives relate to the implementation of Section 629. In the *AllVid NOI*, the FCC contends that Section 629 could lead to “[c]ompetition in the manufacturing and distribution of consumer devices” as Congress envisioned.⁹² The alleged benefits of such competition are “innovation, lower prices and higher quality.”⁹³ In light of this view of Section 629, we model price and quality choices of the multichannel video provider with regard to services and boxes. Also, in an effort to address the belief that the multichannel video providers have intentionally frustrated the development of a competitive market for set-top box equipment,⁹⁴ we evaluate the provider’s preference for self- versus market-supply of the boxes. The model mimics the typical transaction by assuming a consumer purchases a multichannel video service, which requires the use of a set-top box. Since market power is often argued to drive the behavior of multichannel video providers with regard to the set-top box, we assume the video provider is a monopolist.⁹⁵

A. Basic Theoretical Setup

We consider the case of a single provider of a service, S , produced at a constant per unit cost of s . Each consumer decides whether or not to buy the service, depending on his or her valuation of it. In order to obtain the service, however, the consumer must also procure a converter or “set-top box”, B , and this box can, in theory, be produced or provided either by the multichannel video provider or by an outside “retail market” source. Thus, the service S and the

of mobile telephone equipment, but this includes a \$50-150 deductible. *AT&T Mobile Insurance*, AT&T, <http://commcns.org/WKRekf> (last visited Nov. 10, 2012) (“Effective Oct. 4, 2011, the premium will increase to \$6.99 per enrolled mobile number”).

⁹¹ See, e.g., Charter Commc’ns, Inc., Annual Report (Form 10-K), 6 (Feb. 26, 2010) (accessible via SEC Electronic Filing System) (“In accordance with FCC rules, the prices we charge for video cable-related equipment, such as set-top boxes and remote control devices, and for installation services, are based on actual costs plus a permitted rate of return in regulated markets.”).

⁹² *AllVid NOI*, *supra* note 2, ¶ 23.

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ We recognize that MVPDs are not monopolists, as each faces competition from *at least* two other providers in nearly all geographic areas. DirecTV and Dish Network have nearly ubiquitous coverage in the continental United States. See, e.g., *In re CoxCom d/b/a Cox Communications Phoenix, Petition for Determination of Effective Competition in Various Arizona Communities*, DA 10-2247, MEMORANDUM OPINION AND ORDER (Nov. 29, 2010) (finding that the Phoenix market was “effectively competitive” for purposes of price deregulation under Section 623(1) of the Act because of competing service provided by two DBS providers, DirecTV and Dish Network).

box B are perfect complements, neither having value without the other.

Consumers value the S and B combination, and are assumed to buy it if the full price is less than the associated valuation. Letting p be the price paid for service S , and r the price of the box B , consumer i buys service if $v_i > p + r$. We assume there are many consumers, and that their valuations, v , are distributed randomly, with cumulative density $F(v)$, marginal density $f(v)$, and with support on the interval $[0, \infty)$. Thus, for the price system (p, r) , the proportion of consumers who buy S and B is just $[1 - F(p + r)] \geq 0$.

B. Optimal Prices

We begin by considering the profit-maximizing pricing problem of a service provider who also is the sole seller of the boxes. Thus, consumers must buy both S and B from the service provider, paying prices p and r determined by this provider without restriction. How would such a provider set prices, and would the seller's monopoly power over the box market prove important for the outcome? The well-known answer is "No", due to the perfect complementarity of S and B : the seller gains no advantage from its control of the box market and only the combined price $(p + r)$ is determined by profit maximization. To see this, let b be the per box cost of the seller, and let s be the per customer cost of service. The service provider's profit is:

$$\pi = [1 - F(p + r)](p + r - b - s), \quad (1)$$

and the firm selects p and r to maximize this expression. This problem, though, is partially degenerate in that only the sum $(p + r)$ is determined by this exercise. In other words, the component prices p and r are individually irrelevant to profit, and the firm can select any combination of p and r that sum to the value determined by the maximization. Thus, let $z = p + r$, and write profit as:

$$\pi = [1 - F(z)](z - b - s), \quad (2)$$

Maximization of (2) with respect to z yields the following condition:

$$[1 - F(z)] - f(z)(z - b - s) = 0, \quad (3)$$

where these expressions are to be evaluated at z^* , the optimal solution. Thus, *any* prices (p^*, r^*) , that satisfy the condition $z^* = p^* + r^*$ are profit maximizing. Let us denote the profit-maximizing profits from z^* as π^* .

C. Consumer Surplus

Consumer welfare will be taken to be equal to total consumer surplus in this market. This total surplus is the sum of individual surplus over the mass of consumers purchasing the service. The expression for consumer welfare, $CS(z)$, is given by:

$$CS(z) = \int_z^{\infty} (v - z) f(v) dv, \quad (4)$$

We note that consumers always benefit from a reduction in the total price of service:

$$\frac{\partial CS}{\partial z} = -[1 - F(z)] \leq 0. \quad (5)$$

This analysis, although somewhat simple, illustrates several important points, some of which we will turn to now. There are two main features of the model to keep in mind. First, since the service and box are consumed together, consumers care only about the sum of the prices, or z . Second, consumers always prefer a lower aggregate price z ; if z falls, then consumers benefit.

D. Effect of Regulated Set-Top Box Prices

In most cases for the cable television industry, the price of the set-top box is regulated at a cost-plus 11.25 percent return. What is the effect of this regulation? Suppose that the regulated price is r' . Being free to set the price for service, the seller would just set $p^* = z^* - r'$ so that profits and consumer surplus would be unchanged. The single price p is sufficient to extract all available profits for the seller. Note that it is irrelevant what price is set by regulation for the box (such as $r' = b$ as in the existing regulation); since the full price is $z = p + r$, any modification to r can be offset by a corresponding change in p .

E. Competitive Supply

We consider next the existence and effects of a competitive alternative supply of set-top boxes. Suppose that this competitive market supply is infinitely elastic at a price of rm .⁹⁶ The effect of this circumstance on the seller and consumers depends, of course, on what rm is, and particularly whether rm is larger or smaller than b , the service provider's cost per box. We assume that the service provider and the competitive suppliers of boxes offer identical boxes, so that the competitive sellers capture the entire box market if $rm < r$, and sell no

⁹⁶ That is, consumers can purchase all they care to at price rm .

boxes otherwise. Let π_m be the service provider's optimal profit with competitive supply price rm . We have the following:

Proposition 1: $\pi_m \geq \pi^$; MVPD profits are never lower with market supply than self-supply.*

Proof. If the service provider sets a price $r < rm$, and sets $p^* = z^* - r$, then he obtains the profit π^* , so he can always assure himself of this profit level. However, if $rm < b$, then he can do even better. To see this, suppose the seller sets $p_0 = z^* - rm$, and sets r at any level above rm , so he sells no boxes. In this case his profit is:

$$\pi_0 = [1 - F(z^*)](p_0 - s) \quad (6)$$

Since $p_0 > z^* - b$, we have $\pi_0 > [1 - F(z^*)](z^* - b - s) = \pi^*$. Thus, whenever $rm < b$, we have $\pi_m \geq \pi_0 > \pi^*$. Q.E.D.

The proof demonstrates that MVPDs may prefer that set-top boxes be provisioned by a commercial market rather than by self-supply if the commercial market can supply such equipment more efficiently than can the MVPDs. In fact, the proof understates the case somewhat, since the pricing policy $p = p_0$ described above is not the optimal policy with competitive supply at a price below the service provider's own costs. An optimal pricing rule can lead to profits even higher than those at p_0 when $rm < b$.

Consider the seller's *optimal* response to competitive box supply at a price rm that is below the seller's own cost level b . We know from the proof of Proposition (1) that, if $rm < b$, the seller will do better by surrendering the box market to the competitive suppliers. Hence, the total price faced by consumers would be $z = p + rm$ and the revenue received by the service provider per customer would be $(z - rm)$. Formally, the service provider selects z to maximize profit given rm :

$$\pi(z; r_m) = [1 - F(z)](z - r_m - s) \quad (7)$$

This parameterized and unconstrained optimization problem exhibits complementarity in the objective function:

$$\frac{\partial^2 \pi}{\partial z \partial r_m} = f(z) > 0. \quad (8)$$

Thus, the objective function in (7) possesses strictly increasing differences between z and the parameter rm . Standard results in lattice programming imply

that the optimizing solution will be an increasing function of the parameter rm .⁹⁷ If we let $zm(rm)$ denote the optimal solution to this unconstrained maximization problem, then we have that $zm(rm)$ is an increasing function. A direct comparison of (2) and (7) yields the immediate fact that $zm(b)$ equals z^* . Thus, if $rm < b$, we have that $zm(rm) < z^*$. Hence, consumers face a lower total price and, by Expression (5), consumer welfare will be higher.

This result, combined with Proposition 1, has the following significance. When the service provider behaves optimally, and efficient competitive suppliers provide the box at a price $rm < b$ (the service provider's box cost), the service provider will welcome the competitive supply, which will increase his profits. Further, the full price of service to the customers is declining in the level of the competitive box cost rm . Thus, any reduction in such costs serves consumers and the firm alike, and the firm has no incentive to block such sales.

F. Incentive to Reduce Set-Top Box Costs and Prices

In the previous section, we showed that the MVPDs prefer a commercial market for set-top boxes when such an arrangement is more efficient and leads to lower equipment prices for consumers. We show here that MVPDs likewise will pursue cost reductions that reduce equipment prices to consumers. Noting that $d\pi/dz = 0$ at the optimal choice z^* , simple differentiation shows:

$$\frac{\partial \pi^*}{\partial b} = -(1 - F(z^*)) < 0. \quad (9)$$

Thus, the service provider would welcome any reduction in the cost of B (such as a reduction in b to $b' < b$, say), since the reduction will result in increased seller profits. The Commission, therefore, should expect video providers to seek low cost and efficient production of their set-top equipment.

It is also the case that a lower cost for set-top equipment increases consumer welfare. Notice that the objective function in (2) exhibits strictly increasing differences between z and b . The optimal aggregate price, z^* , will be an increasing function of box cost:

$$\frac{\partial z^*}{\partial b} > 0. \quad (10)$$

We know from Expression (5) that consumer welfare is determined by z^* . Since lower box costs increase profits, lower total prices, and increase consumer welfare, lower box costs increase overall economic welfare. In the case of costs, therefore, the incentives of multichannel video provider are in line

⁹⁷ See, e.g., DONALD M. TOPKIS, SUPERMODULARITY AND COMPLEMENTARITY (1998).

with the interest of consumers and economic welfare. Both the CableCard and AllVid proposals have been based on the idea that a retail market for such set top equipment may reduce the cost of such devices, but this argument implies that the multichannel video providers are not interested in cost reductions, which we have just shown is a false view.

G. Incentive to Innovate

Another argument used by the Commission to support both its CableCard and AllVid creations is that such actions will “spur innovation.”⁹⁸ Embedded in this reasoning is that multichannel video providers do not have adequate incentive to innovate. We turn now to the important problem of market innovations that increase consumer valuation of the service S , rather than decreasing the cost of the box. Although there are many ways one might represent such a change in valuation due to some innovation in service (e.g., proportional increases in values, first order dominating shifts in the valuation distribution, and so on), the simplest and most obvious way is merely to assume that the new innovation raises all consumers’ valuation levels by some positive amount “ e ” (i.e., an *enhancement*). Although simple, this formulation allows for a very clear view of the effects of such value enhancement on the welfare of consumers and the service provider when both behave optimally.

With the enhancement e , consumer i will buy service if $v_i + e > p + r$. This is equivalent to the inequality $v_i > p + (r - e)$. Thus, technically speaking, we can directly translate the enhancement into our previous analysis simply by absorbing it into the box price (r). Hence, let $re = (r - e)$ and define $z = p + re$. The service provider’s profits are:

$$\pi(z; r_e) = [1 - F(z)](z - r_e - s) \quad (11)$$

Next, we let $ze(re)$ denote the maximization of this profit function with respect to z , given the parameter re . Noting the exact similarity between (11) and (7), we can use (8) to conclude immediately that $ze(re)$ is an increasing function. Since $re < r$ and $z^* = ze(r)$, we have that $ze(re) < z^*$. Recalling from (5) that CS is a decreasing function, we conclude that $CS(ze(re)) > CS(z^*)$.⁹⁹ Consumer welfare increases if the market provides a technologically enhanced box.

The service provider’s profit also increases when the competitive market provides an enhanced box. Since $ze(re)$ is optimal and $re < r$, we have that

⁹⁸ *Commercial Availability III*, *supra* note 3, at 14,708 (statement of Chairman J. Genachowski).

⁹⁹ Note that $\int_{p+r-e}^{\infty} (v + e - p - r) f(v) dv = \int_{z_e}^{\infty} (v - z_e) f(v) dv = CS(z_e)$.

$$\pi(z_e(r_e); r_e) \geq \pi(z^*; r_e) > \pi(z^*; r) = \pi^* \quad (12)$$

The service provider has no incentive to block the competitive market's enhanced box as it clearly provides greater profit opportunities. Any enhancement that increases consumer valuation is seen to result in both increased seller profits and increased buyer welfare. Thus, if such an enhancement were available, then the service provider would welcome its introduction and consumers would benefit as well.

We have established that MVPD providers will actively pursue cost reductions and innovations in a manner consistent with consumer interests. Of course, all available cost reductions or imaginable innovations may not be pursued, since in some cases the two may be at odds: a better box may be a more costly box; or, a cheaper box may be a less sophisticated box. In any case, the tradeoffs are apparent. If the innovation increases demand sufficiently enough to warrant a higher cost (and thus a higher price), then it will be pursued. If not, then it will not.¹⁰⁰ While we do not model variations in the capabilities of set-top boxes (e.g., high-definition functionality, digital video recording, and so forth), MVPD providers offer a variety of boxes, with different costs and prices that suit the needs of particular customers.¹⁰¹

V. EVIDENCE AND ANECDOTES

In the previous section, we presented a formal economic analysis of set-top boxes that provides a number of significant insights. In contrast to the common view, our theoretical analysis reveals that the set-top box conveys no market power to the MVPD and that the MVPD has no anticompetitive preference for

¹⁰⁰ See, e.g., George S. Ford, Thomas M. Koutsy & Lawrence J. Spiwak, *The Efficiency Risk of Network Neutrality Rules*, POLICY BULLETIN NO. 16 (Phoenix Ctr. for Advanced Legal & Econ. Pub. Policy Studies, Washington, D.C.), May, 2006, at 9, available at <http://commcns.org/V8i33R>. As is well known, the private gains from innovation may be less than the social gains. As such, firms typically under-invest in innovation. This underinvestment is a general phenomenon and is not limited to the cable industry or the set-top box. See generally T. Randolph Beard, George S. Ford, Thomas M. Koutsy & Lawrence J. Spiwak, *A Valley of Death in the Innovation Sequence: An Economic Investigation*, 18 RESEARCH EVALUATION 343, 343-56 (2009) (regarding the general problem of underinvestment in innovation). To our knowledge, there is no evidence (of which we are aware) to suggest that the general incentive to innovate in the multichannel video industry is diminished relative to that in other industries due to the divergence of private and social gains.

¹⁰¹ See *In re Video Device Competition*, Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, Compatibility Between Cable Systems and Consumer Electronics Equipment, *Comments of Cisco Systems, Inc.*, M.B. Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67, at 11 (July 13, 2010), available at <http://commcns.org/YbLoiH> (accessible via FCC Electronic Comment Filing System) (recognizing "there has been an explosion in the number and use of over-the-top video devices and services over the past several years").

self-supply. The MVPD simply prefers whatever market arrangements most efficiently deliver the equipment to its consumers. Our analysis reveals that if the equipment can be made cheaper and offered at a lower price, then the MVPD will embrace the cost reduction. Also, if the set-top devices can be made more innovatively to increase the value to consumers, then the MVPD is incentivized to implement that innovation. These theoretical results directly conflict with the common view of the service-equipment relationship in the multichannel video market, which is the view held by the FCC as it formulates its Section 629 strategy.¹⁰² However, this “common view” is devoid of any economic foundation, and is, thus, dubious.

In this section, we provide evidence and anecdotes supporting the general themes of our theoretical analysis. A lack of data does not permit a formal econometric analysis of our theory. Nevertheless, there is good evidence to suggest that the theory has value, and we present some of that evidence below.

A. Equipment is Not a Tool for Surplus Extraction

Some potent evidence supporting this theory comes from the archetype equipment model specified by the FCC—the broadband cable modem.¹⁰³ Indeed, the *National Broadband Plan* observes, inter alia, that broadband modems are an “analog for innovation in set-top boxes” because a cable modem “provides all network functions” and “connects via a standardized Ethernet port to numerous devices consumers can buy at the store—including PCs, game consoles, digital media devices and wireless routers.”¹⁰⁴ In so doing, argues the Commission, “innovation can happen on either ‘side’ of that device without affecting the other side.”¹⁰⁵ Similarly, in the *AllVid NOI*, the agency argues, “Ethernet and the IEEE 802.11 standards have led to nationwide interoperability for customer data networks while allowing broadband service providers to deploy differing proprietary network technologies.”¹⁰⁶ Plainly, the FCC believes that the retail acquisition of the set-top box can and should be like the broadband modem.

What is interesting about the FCC’s analogy is that, like set-top boxes, the broadband modem is a piece of equipment provided by broadband providers (including MVPDs) that is inextricably linked to the provider’s service. If, as some claim, the self-supply of equipment is an important instrument for surplus extraction, then we would expect to see the MVPDs (and other broadband

¹⁰² See 47 U.S.C. § 549(a).

¹⁰³ NATIONAL BROADBAND PLAN, *supra* note 3, at 50, fig. 4-1.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *AllVid NOI*, *supra* note 2, ¶ 17.

providers) behave similarly with regard to the modem as they do the set-top box. Yet, the MVPDs who also provide broadband services permit, without interference or constraint, the customer's acquisition of broadband modems in the commercial market. Both cable and DSL broadband modems can be purchased at big-box stores such as Best Buy.¹⁰⁷ This fact indicates that the equipment itself is not a source of market power for MVPDs, as our theory implies. Furthermore, most consumers continue to lease cable modems despite the presence of a competitive retail market for such devices.¹⁰⁸ It appears, from the FCC's own analogy, that the demand for commercial alternatives to leased equipment is low.

Why, then, are there substantially more cable modem options for consumers at retail than there are with the set-top box?¹⁰⁹ One explanation for that difference is that, although a commercial market is equally as efficient as self-supply for broadband modems, self-supply, all things considered, is the more efficient arrangement for set-top boxes. The relative efficiency of self-supply may arise from conditional access and security and theft concerns, some of which are driven by contractual relationships with copyright owners.¹¹⁰ Such concerns are not generally relevant for broadband modems.¹¹¹

Analogies are often useful, but the FCC's search for a suitable analogy for the set-top box—whether it is the telephone or the data modem—is largely pointless. The relative efficiency of self-supply versus commercial-supply of equipment may vary substantially across industry sectors and services. Different outcomes should be expected and regulatory-induced homogeneity renders no apparent benefit. The agency should then, at a minimum, study the root causes of these differences, without pre-judgment, and use this knowledge to

¹⁰⁷ In fact, two of the authors of this paper are using their own personal cable modem to receive broadband service from cable operators.

¹⁰⁸ NPB Public Notice, n.3-4.

¹⁰⁹ *Id.*

¹¹⁰ *AllVid NOI*, *supra* note 2, ¶ 22; *In re Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment, Comments of AT&T, Inc.*, MB Docket No. 10-91, at 51-57 (July 13, 2010) (accessible via FCC Electronic Comment Filing System); *In re Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment, Reply Comments of DIRECTV, Inc.*, MB Docket No. 07-269, at 16-23 (June 8, 2011) (accessible via FCC Electronic Comment Filing System).

¹¹¹ NATIONAL BROADBAND PLAN, *supra* note 3, at 50, fig. 4-1 (discussing that the agency itself concedes that with a cable modem, "PC manufacturers do not need to sign non-disclosure agreements with broadband service providers, license any intellectual property selected or favored by broadband service providers or get approval from any broadband service providers or any non-regulatory certification bodies to develop or sell their PCs at retail or enable consumers to attach them to service provider networks through the interface device").

guide policy rather than simply presume the outcome in one market will be transferable to another.

B. Now You See It, Now You Don't in DBS

In its *Navigation Devices Order*, the FCC decided that satellite video providers, such as DirecTV and EchoStar, were not required to comply with the FCC's separate security rules.¹¹² The Commission's rationale is particularly important to review in detail:

[D]ifferences in the marketplace for DBS equipment, where devices are available at retail and offer consumers a choice, as compared to equipment for other MVPD services, particularly cable operators, provide justification for not applying the rule requiring separation of security functions to DBS service. We are reluctant to implement a rule that could disrupt an evolving market that is already offering consumers the benefits that derive from competition. In the DBS environment, *there are three service providers and at least ten equipment manufacturers competing to provide programming and equipment to consumers. The equipment is available at retail stores.* The result, over a relatively short time frame, has been lower equipment prices, and enhanced options and features. Requiring DBS providers to [comply with the separate security rules] would serve a limited purpose and disrupt technical and investment structures that arose in a competitive environment.¹¹³

At the time of this decision, it was true that DBS equipment was made by a wide variety of manufacturers and could be purchased in numerous retail outlets.¹¹⁴ Not today. Nearly all DBS equipment is now MVPD-branded, though still available at big box retailers and smaller outlets. However, when a consumer purchases the DBS service, the equipment is treated as "leased."¹¹⁵ The evolution of the service-equipment relationship in DBS is highly relevant. The move from a commercial to a leased self-supply model in the DBS sector "arose in a competitive environment."¹¹⁶

As such, the evidence points to the conclusions that the self-supply model is relatively more efficient than the retail model, since inefficiency is not tolerated by competition. We recognize this is but one interpretation of these facts, but it seems apparent that some consideration by the FCC as to the causes of

¹¹² *Id.*

¹¹³ *Commercial Availability I*, *supra* note 13, ¶ 64.

¹¹⁴ *Id.* ¶ 65.

¹¹⁵ Linda Moss, *DirecTV's New Lease on Life*, MULTICHANNEL NEWS (Jan. 23, 2006); DirecTV Group Inc., Annual Report (Form 10-K), at 4 (Feb. 26, 2009) ("Most set-top receivers provided to new and existing subscribers are leased subsequent to the introduction of the lease program on March 1, 2006"); Dish Network Corp., Annual Report (Form 10-K), at 4 (Mar. 1, 2010) ("We incur significant upfront costs to provide our new subscribers with in-home equipment, including advanced HD and DVR receivers, which most of our new subscribers lease from us. While we seek to recoup such upfront equipment costs mostly through monthly fees, there can be no assurance that we will be successful in achieving that objective.").

¹¹⁶ *Commercial Availability I*, *supra* note 13, ¶ 64.

this significant change in the service-equipment relationship in the DBS sector is warranted before substantially expanding the scope of its Section 629 efforts.

C. The Cost of Set-Top Boxes

A reduction in cost for set-top boxes is significant for the industry. Cable operators' largest annual capital expense is consumer premises equipment (video boxes, VoIP equipment, and broadband modems), representing more than half of total capital expenditures. Lease fees do not always recover these costs.¹¹⁷ Table 1 provides the figures for Comcast and Charter Communications.¹¹⁸ As explained by Charter, "[d]uring 2010, we expect capital expenditures to be approximately \$1.2 billion. We expect the nature of these expenditures will continue to be composed primarily of purchases of customer premise equipment related to telephone and other advanced services."¹¹⁹ Our theory shows that firm profits rise when set-top box costs fall, so the industry will actively seek to minimize the cost of the equipment and, in turn, minimize the price to consumers. Given the significant share of capital costs, cost reductions are likely to be significant to both MVPDs' profits and their consumers' well-being.

Table 1. Distribution of Capital Expenditures

	Comcast	Charter
Customer Premises Equipment	2,934 (58%)	593 (52%)
Scalable Infrastructure	855 (17%)	216 (19%)
Line Extensions	120 (2.4%)	70 (6%)
Upgrade/Rebuild	421 (8.4%)	28 (2.5%)
Support Capital	356 (7.1%)	227 (20%)
Commercial Services	351 (7%)	...
Total Capital Expenditures	5,037	1,134
Source: Comcast and Charter 2009 Form 10-K.		

There is more empirical evidence to support this conclusion. As observed in the *AllVid NOI*, the FCC has granted waivers "to cable operators in financial

¹¹⁷ See, e.g., Dish Network Corp., Annual Report, *supra* note 115, at 4.

¹¹⁸ Comcast, Annual Report, *supra* note 88; Charter Commc'ns, Inc., Annual Report, *supra* note 91.

¹¹⁹ Charter Commc'ns, Inc., Annual Report, *supra* note 91, at 50.

distress”¹²⁰ and in cases rendering “substantial public interest benefits by significantly reducing cost.”¹²¹ Plainly, if waivers are granted in cases of financial distress and provide benefits in the form of reduced costs, then the existing CableCard regime must be costly; cable companies are better off financially with a waiver, in part because they can offer lower priced equipment to consumers to expand their subscriptions. As noted above, the Commission admitted before the D.C. Circuit that its integration ban may increase the cost of set-top boxes in the short-run.¹²² The agency’s promise of an offset in the form of lower prices and more innovation never materialized, but the higher prices and costs did.

D. The Industry Supports a Commercial Market

While the MVPD industry is uniformly against the FCC’s strict control of set-top box design and evolution by way of its AllVid mandate, the industry does not appear to be opposed to a commercial market for set-top equipment, or even opposed to some of the functionality embedded in the AllVid device. For example, the National Cable & Telecommunications Association (“NCTA”) states,

Our industry is committed to providing content to consumers where and when they want it, on all possible consumer devices, and for those devices to be innovative platforms for new applications. We want consumers to be able to buy video devices at retail and to know that cable content can be among their video sources.¹²³

The NCTA outlines seven principles to which cable operators are committed, including, but not limited to, the principle that “consumers should have the option to purchase video devices at retail that can access their multichannel provider’s video services without a set-top box supplied by that provider.”¹²⁴ Included in its lists of potential solutions is “delivery from the ‘cloud’ without the need for any dedicated receiving device.”¹²⁵

The industry does, however, comprehend the complexity of the issue. For example, as the NCTA states,

[W]ell-crafted solutions must account for how content providers license programming

¹²⁰ *AllVid NOI*, *supra* note 2, ¶ 9.

¹²¹ *Id.*

¹²² *Comcast Corp.*, FCC, 526 F.3d 763, 767 (D.C. Cir. 2008).

¹²³ *In re Video Device Competition, Implementation of Section 304 of the Telecomm. Act of 1996, Commercial Availability of Navigation Devices, Compatibility Between Cable Systems and Consumer Electronics Equipment, Comments of the Nat’l Cable and Telecomm. Ass’n. on the Commission’s Notice of Inquiry*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67, at Exhibit A (July 13, 2010) [hereinafter *Comments of Nat’l Cable and Telecomm. Ass’n*].

¹²⁴ *Id.* at 2.

¹²⁵ *Id.* at 30.

to distributors, how all video providers associate security, transactional, advertising, and promotional elements with their video products, how consumer electronics manufacturers and retailers build support for new product categories, what consumers are willing to buy rather than lease, and how to assure that solutions do not inadvertently handicap future innovation. Solutions must also assure that, as Internet content is delivered over the television, it is afforded all of the copyright protections that apply when it is delivered to the home computer.¹²⁶

Considering these (and other) complexities related to the technical delivery of modern multichannel video services, it is not difficult to see why the self-supply of set-top equipment is widely-viewed in the industry as more efficient than a commercial market.

These statements are, as indicated from elements of the cable television industry, an industry many feel has intentionally given the CableCard short shrift. There will surely be those that view these industry comments as disingenuous. However, our economic analysis encourages an alternative view, perhaps a better explanation for the alleged difference between stated intent and behavior with regard to set-top boxes is that the technical and practical nuances of creating a commercial market for such equipment are greatly underappreciated by industry outsiders, including the FCC.

An MVPD provider's line of business is selling video. As noted above, the MVPDs are now exploring and implementing ways to deliver their programming over an increasing number of devices (iPad, XBox, Wii, among others) and using a wide variety of formats. Improving the set-top box, getting it into the hands of consumers at lower prices, and possibly even eliminating the box altogether, is plainly in the interest of the MVPD provider as long as such actions increase the consumers' willingness to pay for video services. In this light, opposition to AllVid is not about the device's proposed functionality, or about a competitive market for equipment. The opposition, it appears, arises from ham-handed regulatory mandates for particular technological choices that *limit* innovation and tend to raise the price for equipment (as did the CableCard). Higher prices for equipment, absent an offsetting quality increase, are not good for consumers or for MVPD providers.

E. Incentive to Innovate

Above we presented an economic model showing that the incentives of the multichannel video provider with respect to the set-top box are compatible with the desires of consumers and economic welfare in terms of innovation. This view is consistent with the financial reporting of the cable industry. The largest cable operator, Comcast, stated in its Form 10K filing, "[w]e are focusing our technology initiatives on extending the capacity and efficiency of our

¹²⁶ *Id.* Exhibit A.

networks, increasing the capacity and functionality of advanced set-top boxes, developing and integrating cross-service features and functionality, and developing interactive Internet protocol-based services.”¹²⁷ In its annual financial filings, Comcast also makes clear the harms to innovation that would flow from an aggressive regulatory approach to implementing Section 629: “Some of the alternative approaches [to Section 629], if adopted, could impose substantial costs on us and impair our ability to innovate.”¹²⁸ Since the set-top box is an essential component of many MVPD services, improving the set-top box is an important goal of the industry. Giving customers high-cost, low-quality set-top boxes reduces the demand for service, and thus reduces profits. As we have shown above, even a monopolist would not pursue such a strategy. Moreover, there is no good reason to suspect that outside vendors will have more interest in innovation than multichannel video providers since the video providers directly earn profits from the business, so a forced commercial market for set-top boxes is unlikely to generate much benefit in this regard.¹²⁹

VI. CAVEAT: THE CASE OF VARIABLE PROPORTIONS

The analysis presented above assumes a one-to-one type consumer demand for boxes B and service S . Although this appears to be a fairly restrictive assumption, the applicability of the analysis to the case of a “continuous” number of boxes can be easily demonstrated. The number of boxes used by a household may be some number greater than one.¹³⁰ Suppose that we retain our demand set-up, with the addition of a representative consumer model for set-top box demand. The immediate consequence of this formulation is that, while consumers vary, as before, in their valuations of service (v varies as above), consumers have identical demands for boxes or, somewhat less restrictively, consumer welfare resulting from changes in box prices (or qualities) can be sufficiently analyzed using the widely-applied representative consumer formulation. This approach avoids the technical complications that necessarily arise when we have differentiated households that exhibit possibly correlated valuations for service and boxes. (It is quite unclear, *a priori*, how these preferences should be represented in this more complex case.)

Given this set-up, a reinterpretation of the meaning of the box price r and the enhancement variable e allows us to generalize the previous results in each,

¹²⁷ Comcast, Annual Report, *supra* note 88, at 3.

¹²⁸ *Id.* at 9.

¹²⁹ Cf. Ronald S. Burt, *Structural Holes and Good Ideas*, 110 AM. J. SOCIOLOGY 349 (2004) (discussing the source of innovation must rest in the “diversity” logic).

¹³⁰ Comcast, Annual Report, *supra* note 88, at 6 (“On average, as of December 31, 2009, each digital video customer had 2.0 digital set-top boxes, including digital transport adapters.”).

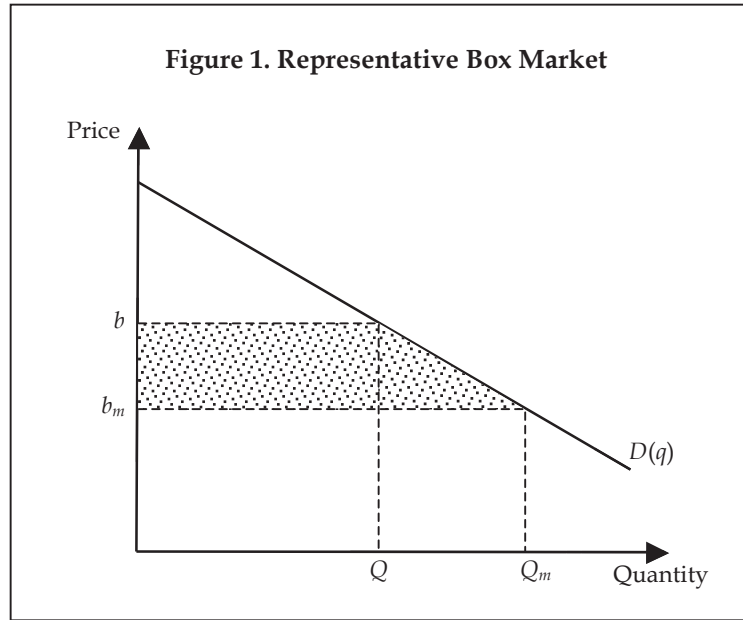
particularly when the service provider's box price is regulated. Specifically, it is once again the case that the service provider and consumers would benefit from a reduction in box "price" through competitive supply, and the service provider would not block, but would welcome, a competitive provision of boxes (if at a lower cost than self supply). Again, the incentives of the service provider, and those of consumers and society, would be well aligned.

We assume additional boxes increase the utility of the service by an amount equal to the area under the inverse demand curve $D(q)$, as illustrated in Figure 1. The cases where the box is supplied by the service provider at a cost-regulated price (b) or provided by a competitive market at a price of bm can be easily compared using our prior framework. Letting $D(Q) = b$ and $D(Q_m) = bm$, the enhancement from boxes in each case is given by:

$$E = \int_0^Q D(q) dq \quad (13)$$

$$E_m = \int_0^{Q_m} D(q) dq \quad (14)$$

Next, let $r = (bQ - E)$ and $rm = (bmQ_m - E_m)$. We can now apply the prior analysis to this situation noting that rm is less than r by an amount equal to the shaded area in Figure 1.



The implication of this finding is immediate. Suppose that a competitive supply of boxes emerges at a box price *bm* below the service provider's regulated offering. Then the provider voluntarily yields the box market to the entrants, and the result of this action is effectively a reduction in the box "price" *r*, as detailed above. From our prior analysis, we know that this results in increased service provider profits and increased consumer welfare, so social welfare increases.¹³¹ Consumers respond to the lower box price by buying more boxes, creating an additional benefit to service/equipment consumption.

While the set-top box prices for cable television operators are often regulated, this is not the case for direct broadcast satellite providers. The satellite providers are not subject to rate regulation under the provisions of the 1992 Cable Act or the 1996 Telecommunications Act; nor are they now required to provide separate security functions in the form of a CableCard or similar device.¹³²

In the case of continuous demand, the freedom to set both service and box prices gives rise to the potential for price discrimination.¹³³ Theoretically, the discriminatory price vector for service and boxes could be anything. How price discrimination would be used in the industry is theoretically ambiguous; it is an empirical question. Fortunately, evidence is available. For satellite video providers, a set-top box is required for each television, and the prices for these boxes are unregulated. As a result, the case for discriminatory pricing leading to high box prices is likely highest in the satellite industry. However, the evidence does not support the use of such practices. For example, as of September 2012, Dish Network provides the standard set-top boxes at *no additional charge* for some plans.¹³⁴ High Definition boxes are only \$7.00 per month, which is consistent with pricing in the regulated cable television industry.¹³⁵ DirecTV offers the first receiver free with all service plans.¹³⁶ Notably, prior to 2006 DirecTV did not use a lease program, and a \$5.00 fee applied to each additional television in the customer's home (each set-top box requires a converter card, so quantity can be measured).¹³⁷ Changing to a lease program did not alter the pricing of additional television outlets, indicating that the set-top box is not a useful tool for implementing price discrimination.

¹³¹ See discussion *infra* Part IV Section E.

¹³² See 47 U.S.C. § 549(b); *Commercial Availability I*, *supra* note 13, ¶ 64.

¹³³ For discussion of the FCC's purpose in enacting these rules, see *Commercial Availability III*, *supra* note 3, ¶ 1.

¹³⁴ *English Special Offers*, DISH NETWORK, <http://commcns.org/11C76x8> (last visited Nov. 10, 2012).

¹³⁵ *Set Up Your Televisions*, DISH NETWORK (on file with *CommLaw Conspectus*).

¹³⁶ *English Packages*, DIRECT TV, <http://commcns.org/VroaSa> (last visited Nov. 10, 2012).

¹³⁷ See DirecTV, Annual Report, *supra* note 88, at 50.

VII. FACT-BASED LEGAL AND ECONOMIC ARGUMENTS FOR SUNSET OF SECTION 629

Given the above, is there a compelling policy reason for the Commission to continue with its quixotic attempt to try to develop a commercial retail market for set-top boxes? The answer is clearly, no. As noted in preceding sections, the FCC has repeatedly conceded that its “separable security” approach to Section 629 is an uncontested failure;¹³⁸ to try again seems, at this point, to be the triumph of hope over experience. Moreover, the video market is presently undergoing substantial transformation and experiencing rapid innovation.¹³⁹ As such, the timing for a regulatory-mandated technology standard could not be worse. Similarly, using regulation to force a commercial retail market is arguably poorly motivated because providers have not demonstrated anti-competitive behavior with regard to the set-top box. To the contrary, MVPDs are strongly motivated to provide low-cost, high-feature set top equipment to consumers, and regulation is unlikely to lower price, improve quality, or increase innovation. Indeed, the Commission has repeatedly acknowledged that its CableCARD rules increase prices and reduce network deployment.¹⁴⁰ Perhaps most importantly, AllVid’s ultimate failure is virtually inescapable because the commercial market envisioned under Section 629 is, today, inefficient, and markets abhor inefficiency.

We hold no monopoly on skepticism regarding the successful implementation of Section 629. Regarding CableCARD, Commissioner Michael Copps observed, “[t]he intent, we all recall, was to spur on a competitive retail market to provide consumers more choice. But it didn’t happen. In many ways, the outcome of our pursuit has been the opposite of what was intended.”¹⁴¹ Commissioner Copps’ take on the renewed effort, which he supports, is likewise pessimistic--noting that the AllVid proposal is “a particularly ambitious one”¹⁴²—and comes with a warning: “I would just caution my colleagues on

¹³⁸ See discussion *infra* Part III Section A.

¹³⁹ *AllVid NOI*, *supra* note 2, ¶ 13 (“[D]elivery platforms continue to evolve at a rapid pace”).

¹⁴⁰ *Commercial Availability II*, *supra* note 45, ¶ 29 (“[W]e believe it is likely that consumers will face additional costs in the short term as a result of the prohibition on integrated navigation devices”); see also *Charter Commc’ns, Inc. v. FCC*, 460 F.3d 31, 41-42 (D.C. Cir. 2006); *Comcast Corp. v. FCC*, 526 F.3d 763, 767 (D.C. Cir. 2008) (“[T]he FCC has conceded that the integration ban may impose short-term costs on cable companies and consumers”).

¹⁴¹ *In re Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, Compatibility Between Cable Systems and Consumer Electronics Equipment, Fourth Notice of Proposed Rulemaking*, 25 F.C.C.R. 4275, 4326 (Apr. 21, 2010) [hereinafter *Commercial Availability Fourth NPRM*] (statement of Comm’r Copps).

¹⁴² *Id.* at 4327 (statement of Comm’r Copps).

how much work and pushing from this Commission will be required to reach the happy world of gateway device availability. . . . [T]he sad saga of the CableCARD illustrates the pitfalls that await us at every corner.”¹⁴³ Commissioner Copps also suggests that success requires “true private sector-public sector coordination and partnering,” yet many in the private sector are opposed to regulatory-mandated technology standards, including MVPDs, programmers and other content suppliers.¹⁴⁴ Success, therefore, faces significant hurdles. Similarly, Commissioner McDowell observed that “technological innovation continues to outpace the government’s ability to keep up” and indicates he will “remain humble about the government’s ability to predict the pace and direction of technological developments. If nothing else, our experience in implementing Section 629 should remind us of the value of modesty in rulemaking.”¹⁴⁵

Commissioner McDowell goes further by suggesting that given the difficulty of implementing Section 629, “some may want to ask Congress to consider new options.”¹⁴⁶ Congress need not be bothered to end the futile effort, however, since the Act provides the Commission the authority to do so itself by sunseting the regulation. In this section, we set forth what we believe to be sound economic, legal, and evidentiary arguments to support a sunset of Section 629 under the relevant statutory provisions. First, we outline the parameters of Section 629, and show that the ability to invoke the sunset provision will hinge on how the Commission defines “fully competitive.” Given that Congress never provides a definition of “fully competitive,” we next propose a definition that is flexible, economically sound, suitable to the industry, and relevant for evaluating the removal of regulation. In particular, we recommend the use of an “effectively competitive” or “workably competitive” standard. Finally, we apply this definition and find that there is a plausible legal and evidentiary case for sunset.

A. Statutory Background

Section 629(a) of the Act directs the FCC to “adopt regulations . . . to assure

¹⁴³ *Commercial Availability III*, *supra* note 3, at 14,709 (statement of Comm’r Copps).

¹⁴⁴ *See Comments of Nat’l Cable and Telecomm. Ass’n*, *supra* note 123, at 33-43; *In re Video Device Competition, Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, Compatibility Between Cable Systems and Consumer Electronics Equipment, Joint Reply Comments of Program Networks*, M.B. Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67, at 2-6 (Aug. 12, 2010), available at <http://commcns.org/UT5w2y>.

¹⁴⁵ *AllVid NOI*, *supra* note 2, at 4299 (statement of Comm’r McDowell).

¹⁴⁶ *Commercial Availability III*, *supra* note 3, at 14,711 (statement of Comm’r McDowell).

the commercial availability, to consumers of multichannel video programming . . . of converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming . . . from manufacturers, retailers, and other vendors not affiliated with any multichannel video programming distributor.”¹⁴⁷ Under Section 629(e), the Commission may sunset these regulatory interventions upon making the following determinations: “the market for the multichannel video programming distributors is fully competitive; the market for converter boxes, and interactive communications equipment, used in conjunction with that service is fully competitive; and elimination of the regulations would promote competition and the public interest.”¹⁴⁸ Plainly, sunset hinges largely on the definition of “fully competitive” under Sections 629(e)(1) and (2), but the Act provides no formal definition of the term.¹⁴⁹ Nor is “fully competitive” a term of art in Economic science. While the Commission has issued some preliminary dicta on how it might define the relevant product and geographic markets for purposes of a potential Section 629(e) petition,¹⁵⁰ it too has shied away from providing a definition of “fully competitive.”¹⁵¹ Given this lack of guidance and precedent, the Commission has the flexibility to establish the parameters of the term “fully competitive” to evaluate any petition for sunset; and the Commission’s parameters would be given strong judicial deference under the *Chevron* doctrine.¹⁵² In our view, the agency’s definition of “fully competitive” should be economically legitimate, reflect the economic realities of the communications business, and correspond to the statutory objective of assessing the value of economic regulation. We provide such a definition in the next section.

An analysis of the current state of competition under Sections 629(e)(1) and (2) is not the sole consideration for sunset, however. Section 629(e)(3), which focuses on the affirmative promotion of competition and the broader public interest, clearly requires the agency to consider the burden of regulation on economic outcomes.¹⁵³ Indeed, Congress recognized the potential that FCC regulations under Section 629 could have “the effect of freezing or chilling the development of new technologies and services”¹⁵⁴ or, just as importantly, per-

¹⁴⁷ 47 U.S.C. § 549(a).

¹⁴⁸ 47 U.S.C. § 549(e).

¹⁴⁹ See 47 U.S.C. § 549(a) (stating that regulations will “cease to apply when *the Commission*” determines there is fully competitive behavior) (emphasis added).

¹⁵⁰ *Commercial Availability I*, *supra* note 13, ¶ 111 (“The Commission has stated that the relevant geographic market for assessing MVPD competition is local and its extent can be defined by the overlap of the ‘footprints’ of the various service providers”).

¹⁵¹ *Id.* ¶¶ 109-113 *aff’d*, *Gen. Instrument Corp. v. FCC*, 213 F.3d 724 (D.C. Cir. 2000).

¹⁵² See generally, *Chevron, U.S.A., Inc. v. Natural Res. Def. Council*, 467 U.S. 837 (1984).

¹⁵³ 47 U.S.C. § 549(e).

¹⁵⁴ See H.R. REP. NO. 104-458, at 180-81 (1996) (Conf. Rep.), *reprinted in* 1996

haps be contrary to the public interest for other reasons.¹⁵⁵ Given that the stated purpose of the 1996 Act was to reduce regulation whenever possible,¹⁵⁶ Section 629(e)(3) provides the opportunity to sunset a regulatory effort with little hope of a positive net social return.

The Commission has not been silent on the statutory requirements for a sunset of Section 629. In its 1998 *Navigation Devices Order*, the agency addressed the issue. Most of the discussion is non-committal and centers on market definition.¹⁵⁷ In that regard, the Commission defines “MPVD services” as the relevant product market for purposes of 629(e)(1)¹⁵⁸ and “any navigation devices subject to Section 629” as the relevant product market for navigation devices.¹⁵⁹ This choice of market directly coincides with the statutory setup, and is important in some respects (as discussed below). On geographic market definition, however, the statute is silent, and the Commission has not made a formal determination, but has discussed both narrow and wide market boundaries.¹⁶⁰

The agency has made two other findings of note. First, while the Commission did not require satellite providers to comply with the CableCARD integration ban, the Commission concluded that DBS was not wholly exempt from the Section 629 mandate.¹⁶¹ Indeed, the agency intends for satellite providers to

U.S.C.C.A.N. 10.

¹⁵⁵ See *id.* (For example, the Commission is required to be “cognizant of the current state of the marketplace and consider the results of private standards setting activities” when promulgating regulation).

¹⁵⁶ The preamble of the Telecommunications Act of 1996 directed the FCC to adhere to a “pro-competitive, deregulatory national policy framework.” See, S. REP. NO. 104-230, at 113 (1996) (Conf. Rep.).

¹⁵⁷ *Commercial Availability I*, *supra* note 13, ¶ 110 (“a relevant product market and a relevant geographic market must be determined and analyzed”).

¹⁵⁸ *Id.* (noting that “a relevant product market and a relevant geographic market must be determined and analyzed and that “[f]or purposes of Section 629(e), the market for MVPD programming services is an appropriate product market because the broader market definition encompasses the full range of MVPD services available to consumers”).

¹⁵⁹ *Id.* ¶ 111 (“With respect to the market for equipment, we conclude that any navigation device subject to Section 629 shall constitute the appropriate equipment market for Section 629(e) purposes”).

¹⁶⁰ See discussion *infra* n. 151; see also *Commercial Availability I*, *supra* note 13, ¶ 111 (“The Commission has stated that the relevant geographic market for assessing MVPD competition is local and its extent can be defined by the overlap of the ‘footprints’ of the various service providers. We believe that local geographic markets, akin to Nielsen’s ‘areas of dominant influence,’ or Standard Metropolitan Statistical Areas, as determined by the Office of Management and Budget, may be an appropriate geographic market definition”).

¹⁶¹ *Commercial Availability I*, *supra* note 13, ¶ 112 (“[W]e cannot conclude that the rules in their entirety should never be applied by virtue of the ‘sunset’ criteria . . . Congress did not exclude DBS from the reach of Section 629, even though the competitive state of DBS services was known at the time of the enactment of the 1996 Act.”).

participate in its AllVid scheme.¹⁶² Consequently, by the market definition discussion above, the equipment for satellite providers is part of the product market for navigation devices.¹⁶³ Second, the agency does not reject the statutory “effectively competitive” standard, as defined in Section 623(l), as a useful analogy for Section 629(e)’s notion of “fully competitive.”¹⁶⁴ As discussed below, a definition of “effective competition” is a much more realistic standard than “perfect competition,” particularly in light of how the FCC has implemented the “effective competition” standard.¹⁶⁵

B. How to Define “Fully Competitive”?

As noted above, the 1996 Act provides no direct statutory definition of “fully competitive” in the context of Section 629(e). Implementing the section, therefore, requires the agency to assign meaning to the term. In this section, we explore two possible definitions. At the extreme, the term “fully competitive” could be associated with the textbook notion of “perfect competition.” As we have explained in prior research and do so again here, this definition is entirely inappropriate for communications markets.¹⁶⁶ Perfect competition is a Nirvana—a theoretical perfection no real world market can attain. More sensibly, we turn to the economic concept of “workably competitive” or “effectively

¹⁶² *AllVid NOI*, *supra* note 2, ¶ 1.

¹⁶³ *Id.* at 4275, n.2 (defining a set-top video device, also known as a “smart video device,” as a product that is capable of navigating the universe of video content traditionally found in cable or *satellite* boxes) (emphasis added).

¹⁶⁴ *Commercial Availability I*, *supra* note 13, ¶ 113.

¹⁶⁵ The effective competition standard likely would be satisfied under most geographic market definitions given the ubiquitous presence of satellite video and its one-third share of the national market (exceeding the 15 percent required share). In the 2009 Report on Cable Industry Prices, 31.65 percent of subscribers are in communities that have applied for and received designation as “Effectively Competitive” markets. *See In re Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Rates for Basic Service, Cable Reprogramming Service, and Equipment, Report on Cable Industry Prices*, 26 F.C.C.R. 1769, 1786 (Feb. 14, 2011) (Attachment 1) [hereinafter *2011 Report on Cable Industry Prices*]. This figure likely understates the present share for a number of reasons. First, this figure is from the 2009 survey, and this share is nearly double that from the last report in 2008 (18.1 percent). *In re Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Rates for Basic Service, Cable Programming Service, and Equipment, Report on Cable Industry Prices*, 24 F.C.C.R. 259, 299 (Jan. 15, 2009) (Attachment 1-b). Second, in many cases, franchise authorities were not certified to regulate cable rates, so an “Effectively Competitive” determination provides no benefits to the cable system. Third, in some cases, the legal costs and the expense of obtaining highly local data do not justify a petition.

¹⁶⁶ *See* George S. Ford & Lawrence J. Spiwak, *The Impossible Dream: Forbearance After the Phoenix Order*, PHOENIX CENTER FOR ADVANCED LEGAL & ECONOMIC PUBLIC POLICY STUDIES NO. 10-08, Dec. 2010, at 8, available at <http://commcns.org/KQVys8>.

competitive” to give meaning to the term “fully competitive.” This approach is consistent with earlier Commission findings on the sunset provision of Section 629(e).¹⁶⁷ Relying on these more practical concepts of competition, we are able to construct a definition of fully competitive that is economically legitimate, reflects the economic realities of the communications business, and corresponds to the statutory objective of assessing the social value of economic regulation.

1. “Fully Competitive” Should Not Be Defined as “Perfectly Competitive”

It is not uncommon for the term “fully competitive” to be linked to the textbook notion of “perfectly competitive,” at least loosely.¹⁶⁸ In the context of Section 629(e), this association would be a mistake. With perfect competition, there are large numbers of perfectly-informed buyers and sellers free to enter and exit the market at will, all engaged in transactions for a single, homogeneous product in a centralized market.¹⁶⁹ The long-run equilibrium in such a setting has price equal to marginal cost and all firms, each identical to the others, earn zero economic profit as a consequence of the free entry and exit condition.¹⁷⁰ Perfect competition is a useful theoretical benchmark for a frictionless economy.¹⁷¹ It is not, however, a useful benchmark for expected performance in the communications industry. Moreover, the static outcomes of the model of perfect competition ignore entirely the costs and benefits of regulation.¹⁷² Sunset, and even forbearance more generally, addresses the need for regulation, with full recognition that regulation may affect market outcomes in undesirable

¹⁶⁷ *Commercial Availability I*, *supra* note 13, ¶ 3 (stating that “certain parameters are necessary to ensure the movement of navigation devices toward a fully competitive market”).

¹⁶⁸ COLIN ROBINSON, *COMPETITION AND REGULATION IN UTILITY MARKETS* 135 (2003) (“The traditional textbook model of perfect competition generated a fully competitive outcome.”); MARY C. BRINTON & VICTOR NEE, *THE NEW INSTITUTIONALISM IN SOCIOLOGY* 155 (1998); MILTON FRIEDMAN & STEVEN G. MEDEMA, *PRICE THEORY* 70-4 (2007). For a historical review of the concepts of competition, *see, e.g.*, George J. Stigler, *Perfect Competition, Historically Contemplated*, 65 J. POLITICAL ECON. 1, 1-17 (1957).

¹⁶⁹ ROBERT B. EKELUND JR. & ROBERT D. TOLLISION, *ECONOMICS* 206 (4th ed. 1994).

¹⁷⁰ *Id.*

¹⁷¹ *Id.* at 206, 208.

¹⁷² *See e.g.*, Win Whittaker, *A Price-Level (Incentive) Regulation Proposal for Oil Pipelines*, 46 OKLA. L. REV. 415, 425 (1993) (quoting a book on regulation which points out that the real costs of regulation “go far beyond the consequences of regulation for the cost of doing business. Rather they include the impacts on domestic and international competition, the impacts on capacity decisions, and the consequences for long-term industrial strategies. In many industries that compete on bases other than cost, such as service, variety, or product reliability, and undue focus on costs can miss much that is important to competitive impact. Similarly, whatever value benefit/cost analysis might have as a basis for regulatory decision making, it is inherently incomplete.”).

ways. Section 629(e)(3), for example, expressly recognizes that the regulation may impede competition or may conflict with the public interest in other ways.¹⁷³ Regulation is costly; any meaningful definition of competition used in the context of a sunset or forbearance provision must account for that fact.¹⁷⁴

The equilibrium outcome of primary interest from the model of perfect competition of that price is equal to the marginal cost of production. Given the high fixed and sunk costs necessary for the production of communications services,¹⁷⁵ this outcome is entirely infeasible in communications markets. Price must exceed marginal cost by a sufficient amount to cover the fixed costs of production.¹⁷⁶ The Commission understands the supply-side conditions. In the *National Broadband Plan*, for example, the agency observed, “building broadband networks—especially wireline—requires large fixed and sunk investments.”¹⁷⁷ As a result, the agency concluded, “the industry will probably always have a relatively small number of facilities-based competitors,” but also that “the lack of a large number of . . . providers does not necessarily mean competition among broadband providers is inadequate.”¹⁷⁸

Indeed, perfect competition is a dubious benchmark, and this fact is well established in literature on telecommunications regulation. In the TELECOMMUNICATIONS REGULATION HANDBOOK, for example, a discussion of costs and pricing notes that:

[M]arginal cost is below average costs, and setting a regulated price equal to marginal cost will not allow the operator to recoup all of its costs. In order for the operator not to lose money and go out of business, the regulator had to set at least some prices above marginal cost.¹⁷⁹

¹⁷³ Congress was cognizant that regulation “could have the effect of freezing or chilling the development of new technologies and services” and directed the Commission to take into consideration different factors such as the current state of the marketplace. See H.R. REP. NO. 104-458 (1996) (Conf. Rep.), reprinted in 1996 U.S.C.C.A.N. 10.

¹⁷⁴ See e.g., William P. Rogerson, *The Regulation of Broadband Telecommunications, the Principle of Regulating Narrowly Defined Input Bottlenecks, and Incentives for Investment and Innovation*, 2000 U. CHI. LEGAL F. 119, 138 (2000) (asserting that “any regulation is costly to implement and likely to create various distortions that would not occur if it were possible for competition to operate freely and perfectly”); Anita I. Anand, *Combating Terrorist Financing: Is Canada’s Legal Regime Effective?*, 61 U. TORONTO L.J. 59, 60 (2011) (regulation is “costly, and ineffective regulation imposes unnecessary costs on the private and public sectors”); see also discussion *infra* Figure 1.

¹⁷⁵ NATIONAL BROADBAND PLAN, *supra* note 3, at 36.

¹⁷⁶ See J. Gregory Sidak, *The Failure of Good Intentions: The WorldCom Fraud and the Collapse of American Telecommunications After Deregulation*, 20 YALE J. ON REG. 207, 250 (2003).

¹⁷⁷ NATIONAL BROADBAND PLAN, *supra* note 3, at 36.

¹⁷⁸ *Id.* at 36-37.

¹⁷⁹ HANK INTVEN, JEREMY OLIVER & EDGARDO SEPULVIDA, TELECOMMUNICATIONS REGULATION HANDBOOK B-17 (2000); see also CLEMENT G. KROUSE, THEORY OF INDUSTRIAL ECONOMICS 55 (1990) (“In a homogeneous goods industry the presence of increasing returns in production creates difficulties in using perfect competition as a benchmark for

Plainly, the marginal cost outcome of the model of perfect competition is incompatible with markets with high fixed and sunk costs of production. Put another way, marginal cost pricing does not create equilibrium in communications markets. As noted by Jean Tirole in reference to duopolistic competition, “both firms charging the competitive prices, [price equals marginal cost], is generally not an equilibrium.”¹⁸⁰ Since the equilibrium of perfect competition is never compatible with the equilibrium in communications markets—including cable television—it seems clear that perfect competition is not a useful benchmark.

This fact is not lost on the Commission. Indeed, there are many instances where the FCC itself devises policy in full recognition of the prevalence of fixed and sunk costs and their implications for pricing.¹⁸¹ For example, when the agency set a price for certain types of payphone calls, it concluded:

Because payphones have significant fixed costs that must be recovered, the price for each type of payphone call must exceed the marginal cost of the call if the payphone is to earn a normal rate of return. Stated another way, if every call is priced at the marginal cost of that call, the payphone would be unprofitable, because it would fail to recover the predominant fixed costs of providing the payphone.¹⁸²

Likewise, in its 2008 SATELLITE COMPETITION REPORT, the agency observed:

[M]etrics of the unit price-cost margin . . . are difficult to interpret as indicators of market power and the extent of competitive rivalry in industries where firms, such as satellite carriers, utilize technologies with large fixed costs and substantial economies of scale. . . . Pricing output at marginal cost . . . is therefore unprofitable for satellite firms, since such pricing will produce losses equal to the fixed costs of production.¹⁸³

Even former FCC Chairman Reed Hundt observed:

In an industry with large sunk costs and small marginal costs, like most of the telecommunications industry, pricing that goes to marginal cost will not provide an adequate return to the investors who provide capital. Investors will be cautious about investing money upfront because *ex post* competition could drive prices to nonremu-

social efficiency. Prices set equal to marginal cost in this case will lead to losses”).

¹⁸⁰ JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 214 (1988).

¹⁸¹ See, e.g., NATIONAL BROADBAND PLAN, *supra* note 3, at 47 (“economies of scale, scope and density that characterize telecommunications networks”); *In re* Review of Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996; Deployment of Wireline Services Offering Advanced Telecommunications Capability, *Report and Order and Order on Remand and Further Notice of Proposed Rulemaking*, 18 F.C.C.R. 16978, ¶ 244 (Feb. 20, 2003).

¹⁸² *In re* Implementation of the Pay Telephone Reclassification and Compensation Provisions of the Telecommunications Act of 1996, *Third Report and Order, and Order on Reconsideration of the Second Report and Order*, 14 F.C.C.R. 2545, ¶ 33 (Jan. 28, 1999) (footnotes omitted).

¹⁸³ *In re* Second Annual Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services, *Second Report*, 23 F.C.C.R. 15170, ¶ 90 (Oct. 14, 2008).

nerative levels.¹⁸⁴

Plainly, the inapplicability of the model of perfect competition in communications markets is widely accepted. In fact, the price equals marginal cost outcome could lead to a more direct legal challenge of using perfect competition as a performance benchmark. For example, viewed in the context of the traditional “just and reasonable” ratemaking standard found in Section 201,¹⁸⁵ to define “fully competitive” as “perfectly competitive” sets a *de facto* benchmark standard which is “confiscatory” and outside of the “zone of reasonableness,” since marginal cost pricing does not permit the recovery of all costs in communications markets characterized by high fixed and sunk costs.¹⁸⁶

In sum, while perfect competition is a legitimate theoretical concept, its policy relevance is less clear. Perfect competition is a textbook Nirvana that fails to reflect the economic realities of the communications industry—and nearly every other industry. The static outcomes of the perfectly competitive equilibrium are wholly incompatible with the supply-side economic conditions of the communications markets. Furthermore, the static outcomes of perfect competition provide no insight into the statutory objective of assessing the value of economic regulation. A narrow focus on price-cost margins says nothing about the costs of regulation, and such costs should be contemplated by statute.

Moreover, the statute itself recognizes that the regulation may impede competition and, therefore, a refusal to sunset the provisions due to a lack of competitive perfection conflicts with congressional intent.¹⁸⁷ As discussed below, economic research provides significant guidance on a more meaningful standard for the Commission to adopt when defining “fully competitive” under Section 629(e).

2. “Fully Competitive” is Better Defined as “Effectively Competitive” or “Workably Competitive”

Economists have long been dissatisfied with the rigid concept of perfect competition as a standard for actual market outcomes.¹⁸⁸ Few, if any, markets

¹⁸⁴ Reed E. Hundt & Gregory L. Rosston, *Communications Policy for 2006 and Beyond*, 58 FED. COMM. L.J. 1, 6 (2006).

¹⁸⁵ 47 U.S.C. § 160(a).

¹⁸⁶ See, e.g., *Verizon v. FCC*, 535 U.S. 467, 481 (2002); *Farmers Union Cent. Exch. v. FERC*, 734 F.2d 1486, 1502 (D.C. Cir. 1984). Nevertheless, the FCC is not always so judicious in its acknowledgement and application of economic principles. For example, in its recent *Phoenix Forbearance Order*, the agency establishes a marginal cost pricing standard for Section 10 forbearance—a standard that will be impossible to satisfy. See Ford & Spiwak, *The Impossible Dream*, *supra* note 166, at 8.

¹⁸⁷ See 47 U.S.C. § 549(e)(1)–(3).

¹⁸⁸ See e.g., Howard A. Shelanski, *Adjusting Regulation to Competition: Toward A New*

are perfectly competitive, but this fact does not warrant widespread government intervention. As a result, economists began to develop the concept known as “workable” or “effective” competition.¹⁸⁹ Generally, workable or effective competition implies the absence of significant monopoly power, where the adjective “significant” implies sufficient market power that would warrant the costs of attempting to reduce it through antitrust or regulatory action.¹⁹⁰

William Shepherd provides an excellent sketch of the issue in his book, *THE ECONOMICS OF INDUSTRIAL ORGANIZATION*:

The basic question is how many comparable competitors are needed for effective competition: as many as 100 or 20 or eight, or instead as few as two? . . .

What gives an effective degree of competition has been debated with increasing rigor since Adam Smith’s *Wealth of Nations* in 1776. . . .

After 1870, neoclassical economists began to carry the concept of competition to its pure, “atomistic” extreme, deriving the precise efficiency results found in beginning economics texts Competition came to be defined as an equilibrium result enforced by the relentless pressures of numberless tiny competitors.

Practical-minded observers have long disapproved of such models as too abstract and extreme. A strong degree of rivalry among several firms . . . can give the same general degree of efficiency, while also providing for rapid innovation. This realistic view of the competitive process among a few rivals is often said to conflict with the neoclassical analysis of equilibrium among numberless firms in atomistic markets. . . .

Yet no such conflict over the true nature of competition really needs to exist. . . . [T]he aim has been only to have intense competition, so that firms are under strong mutual pressure. . . .

One cannot just count firms in judging the degree of competition. . . .

At times, even if there are only two competitors, their rivalry may be intense. Though one of the two firms may get the upper hand for a while in a market, the other may soon fight back and equalize its share of the market and profits. Such a continuing rugged rivalry may stir great efforts from the firms and force prices down close to the levels of their costs. Therefore, effective competition is possible even when there are as few as two or several firms.

...[C]ompetition is a process that can be effective when it is less comprehensive than in the ideal, pure case.¹⁹¹

Shepherd’s observation that “even if there are only two competitors, their rivalry may be intense” and that “one cannot just count firms in judging the degree of competition” is exceedingly relevant for communications markets

Model for U.S. Telecommunications Policy, 24 YALE J. ON REG. 55, 81 (2007) (noting that perfect competition is the wrong standard for market performance in high-fixed-cost industries and that some margin above incremental, variable cost is necessary); FRANK H. KNIGHT, *RISK, UNCERTAINTY, AND PROFIT* § I.I.24 (1921), available at <http://commens.org/V8jT4O> (asserting that “the problem of profit is one way of looking at the problem of the contrast between perfect competition and actual competition.”).

¹⁸⁹ DAVID L. KASERMAN & JOHN W. MAYO, *GOVERNMENT AND BUSINESS: THE ECONOMICS OF ANTITRUST AND REGULATION* 100-01 (1995).

¹⁹⁰ *Id.*

¹⁹¹ WILLIAM G. SHEPHERD, *THE ECONOMICS OF INDUSTRIAL ORGANIZATION* 9-10 (1985).

where the supply-side characteristics often lead to relatively concentrated equilibriums.¹⁹² Concentration, however, need not imply a lack of rivalry. In the *National Broadband Plan*, the Commission concurs, concluding, as noted above, that “the lack of a large number of . . . providers does not necessarily mean competition among broadband providers is inadequate.”¹⁹³

Economist Jesse Markham provides an even more useful conceptualization of the issue in the *AMERICAN ECONOMIC REVIEW*:

A possible alternative approach to the concept of workable competition may be one which shifts the emphasis from a set of specific structural characteristics to an appraisal of a particular industry’s over-all performance against the background of possible remedial action. Definitions of workable competition shaped along these lines might accept as a first approximation some such principle as the following: An industry may be judged to be workably competitive when, after the structural characteristics of its market and the dynamic forces that shaped them have been thoroughly examined, there is no clearly indicated change that can be effected through public policy measures that would result in greater social gains than social losses. Tautological through [sic] this type of definition might be, it at least avoids the pitfall of listing specific market conditions that can have very limited general applicability. Also, it would ascribe paramount importance to that which should be uppermost in the minds of those who formulate public policy—the possibility of prescribing appropriate remedial action. For, unless the concept of workable competition is to be an instrument of public policy, there is little reason for differentiating between workable and pure competition. But to frame definitions for public policy purposes without taking cognizance of the different structural features among industries and within the same industry at specific stages of development, and without recognizing at the outset the political and economic limitations placed upon policymaking authorities, would be to ignore the primary purpose of such definitions, *i.e.*, to indicate wherein an industry does not operate in the public’s interest and what appropriate remedial action is possible.¹⁹⁴

Here we have a very sensible approach to assessing competition in the context of a sunset provision (or forbearance more generally). Markham recommends the joint assessment of “a particular industry’s over-all performance,” which includes not only the observed market outcomes but also the efficacy of “possible remedial action.”¹⁹⁵ In other words, while we may observe prices in excess of marginal cost, and perhaps by a sizeable amount, this outcome cannot be viewed independent of the policymaker’s ability to do something useful about it. Put another way, a claim of a “market failure” is insufficient to warrant regulation or to postpone forbearance from regulation. Inseparable from

¹⁹² See *id.* at 10.

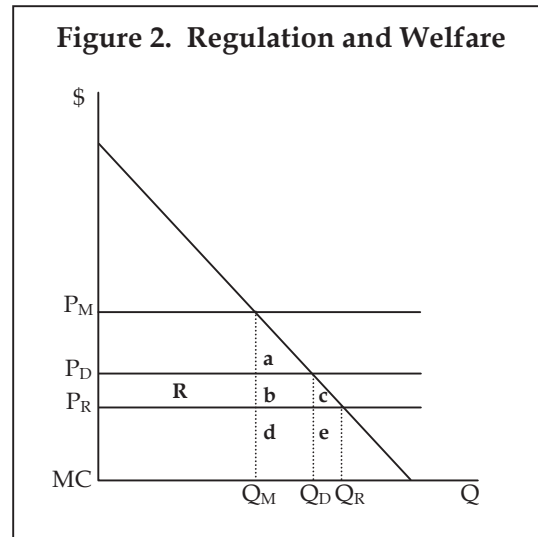
¹⁹³ NATIONAL BROADBAND PLAN, *supra* note 3, at 37; see also George S. Ford, Thomas M. Koutsky & Lawrence J. Spiwak, *Competition After Unbundling: Entry, Industry Structure, and Convergence*, 59 FED. COMM. L.J. 331, 346-51 (2007) (“Empirical and experimental research has shown that there is substantial variation in the relationship between the number of firms (or industry concentration) and prices/profits across industries and over time.”).

¹⁹⁴ Jesse W. Markham, *An Alternative Approach to the Concept of Workable Competition*, 40 AM. ECON. R. 349, 361 (1950).

¹⁹⁵ *Id.*

the market outcome is whether some change “can be effected through public policy measures that would result in greater social gains than social losses.”¹⁹⁶

This notion of workable competition can be illustrated using a simple graph. In Figure 1, we have a demand curve for a good, labeled D . There are three prices: the monopoly price (P_M), the duopoly price (P_D), and the regulated price (P_R), with respective quantities Q_i . Assume marginal cost is zero (MC) and regulation imposes a fixed administrative burden set equal to the rectangular area \mathbf{R} in the figure.¹⁹⁷



If the choice is between monopoly and regulation (price-quantity combinations P_M , Q_M and P_R , Q_R), then the welfare gains are equal to the **abcde** less costs \mathbf{R} , which is clearly positive. Alternately, if the choice is between duopoly and regulation (price-quantity combinations P_D , Q_D and P_R , Q_R), the welfare gain is only **ce** which is less than \mathbf{R} . Thus, on economic welfare grounds (at least in the partial equilibrium analysis), regulation is too costly in the case of duopoly, even though regulation increases welfare in the case of monopoly.¹⁹⁸ Notably, the implementation of cable rate regulation was based on the rule

¹⁹⁶ *Id.*

¹⁹⁷ The choice of \mathbf{R} is illustrative only and has nothing to do with the prices or quantities. The costs of regulation could take many forms other than a fixed administrative cost. Also, the cost of implementing regulation may be much higher in a duopolistic setting than under monopoly conditions.

¹⁹⁸ See T. Randolph Beard, George S. Ford, Lawrence J. Spiwak & Michael Stern, *A Policy Framework for Spectrum Allocation in Mobile Communications*, 63 FED. COMM. L.J. 639, 653 (2011), available at <http://commcns.org/XhrXyT>.

$P_R = P_D$ because rate reductions were based on the competitive differential.¹⁹⁹ In all cases, prices are well in excess of marginal cost, illustrating that the model of perfect competition offers little guidance on the question of the social value of regulation.

Interestingly, a formal definition of “fully competitive” is provided in the Encarta Dictionary. Encarta defines a *fully competitive service* as “a service for which market forces are sufficiently strong to eliminate the need for government regulation.”²⁰⁰ This general definition is useful in that, as with Markham, competition need not be textbook perfect to be fully competitive, just adequate enough to eliminate the likelihood of welfare-improving remedial action by either antitrust or regulation.²⁰¹ This definition is consistent with the logic underlying the “effectively competitive” standard in Section 623(l).

This notion of workably or effectively competitive is supported directly by the 1996 Act with regard to cable television markets. Specifically, Congress permitted the elimination of rate regulation for basic tier MVPD programming in markets that are subject to “effective competition.”²⁰² Section 623(l)(1) defines “effective competition” as:

- A. fewer than 30 percent of the households in the franchise area subscribe to the cable service of a cable system;
- B. the franchise area is . . . served by at least two unaffiliated multichannel video programming distributors each of which offers comparable video programming to at least 50 percent of the households in the franchise area; and . . . the number of households subscribing to programming services offered by multichannel video programming distributors other than the largest multichannel video programming distributor exceeds 15 percent of the households in the franchise area;
- C. a multichannel video programming distributor operated by the franchising authority for that franchise area offers video programming to at least 50 percent of the households in that franchise area; or
- D. a local exchange carrier or its affiliate (or any multichannel video programming distributor using the facilities of such carrier or its affiliate) offers video programming services directly to subscribers by any means (other than direct-to-home satellite services) in the franchise area of an unaffiliated cable operator which is providing cable service in that franchise area, but only

¹⁹⁹ See THOMAS HAZLETT & MATTHEW SPITZER, PUBLIC POLICY TOWARD CABLE TELEVISION: THE ECONOMICS OF RATE CONTROLS 26-29 (MIT Press 1997) (discussing pricing effects in different markets).

²⁰⁰ ENCARTA WORLD ENGLISH DICTIONARY (2009); see also 2.3 *Regulation in a Fully Competitive Environment*, ICT REGULATION TOOLKIT, <http://commcns.org/11C900E> (last visited Nov. 10, 2012) (“In a fully competitive environment, there is a more limited need for regulation.”).

²⁰¹ Implicit is that market forces are sufficient to protect consumers and ensure just and reasonable rates. Markham, *supra* note 193, at 361.

²⁰² See 47 U.S.C. § 543(a)(2) (“[I]f the Commission finds that a cable system is subject to effective competition, the rates for the provision of cable service by such system shall not be subject to regulation by the Commission or by a State or franchising authority . . .”).

only if the video programming services so offered in that area are comparable to the video programming services provided by the unaffiliated cable operator in that area.²⁰³

In subpart (A), deregulation is permitted when the cable system has a very low penetration.²⁰⁴ Deregulation in such cases has two sensible justifications. First, the benefits of regulation in low penetration markets may not be sufficient to offset the administrative costs of rate controls. The logic follows directly from Figure 1 above. Second, a low penetration may be indicative of competition from other sources.²⁰⁵ The remaining subparts define effective competition—that is, competition sufficient to warrant the removal of all rate regulations—in its most stringent case as the presence of a single competitor offering service to at least half the market.²⁰⁶ Effective competition, therefore, is defined by Congress as the presence of, essentially, *half a competitor* as the most stringent test. In subpart (D), there is no market overlap requirement.²⁰⁷ Subpart (B) is the most stringent standard, requiring both a 50-percent overlap and 15-percent penetration by the rival.²⁰⁸ The threshold Hirschman Herfindahl Index (“HHI”) for effective competition (and deregulation) under this section is 7,450.²⁰⁹

The Commission’s actual implementation of the “effective competition” standard also indicates that perfect competition is unsuitable. In its review of basic cable deregulation in Montgomery County, Maryland, the Media Bureau concluded:

There is no statutory basis to delay basic rate deregulation in a franchise area until the arrival of perfect competition there and the resolution of all issues between a cable operator and a franchise authority to the latter’s satisfaction. Indeed, Section 623(b)(1) of the Act, which the County invokes, sets the standard for basic cable rates not at perfect competition, but at the level that would be charged if there were effective compe-

²⁰³ 47 U.S.C. § 543(l)(1)(A)-(D).

²⁰⁴ 47 U.S.C. § 543(l)(1)(A).

²⁰⁵ See *2011 Report on Cable Industry Prices*, *supra* note 165, 1805 n.31 (suggesting that low market penetration may have resulted from the presence of a second operator in the community).

²⁰⁶ 47 U.S.C. § 543(l)(1)(B)-(D).

²⁰⁷ 47 U.S.C. § 543(l)(1)(D). With regard to LEC entry, it is the threat that matters. See *In re Implementation of Cable Act Reform Provisions of the Telecommunications Act of 1996*, *Report and Order*, 14 F.C.C.R. 5296, ¶ 11 (Mar. 25, 1999) (“[T]he Cable Services Bureau has found that a LEC’s presence can have a competitive impact on a cable operator before the LEC finishes installing its plant or rolling out its service. We see no reason from the record before us not to continue applying the LEC test in this way when the likelihood of impending competition throughout a substantial part of the incumbent cable operator’s service area is established, the competitive service is commercially available, and potential subscribers in the franchise area served by the incumbent are reasonably aware that the service is either actually available to them or will be available within a reasonable time.”).

²⁰⁸ 47 U.S.C. § 543(l)(1)(B)(ii).

²⁰⁹ The calculation is $85^2 + 15^2$. See DEP’T OF JUSTICE & FTC, HORIZONTAL MERGER GUIDELINES 18-19 (2010), available at <http://commcns.org/SQDgIP>.

tition.²¹⁰

Plainly, the Commission rejects the perfect competition standard when approving deregulation of cable television services.

Notably, we do not necessarily advocate for or reject the formal adoption of the provisions of Section 623(l)(1) as a test to see whether Section 629(e) is satisfied. Nevertheless, Section 623 is important in that Congress deliberately established a standard of effective competition that is far less than the textbook notion of “perfect competition,” and codified the idea that even a little competition eliminates the need for regulation. Furthermore, as discussed above, in its *Navigation Devices Order*, the Commission acknowledged the “effectively competitive” standard is a suitable benchmark for a “fully competitive” MVPD marketplace, though perhaps applying the overlap and penetration thresholds to a larger geographic area than just a franchise market.²¹¹

In light of this discussion, we propose to define *fully competitive* for purposes of Section 629(e) as a “condition where market forces are sufficiently strong to eliminate the need for government regulation.”²¹² As noted above, this definition has many advantages. First, it is drawn from the economic literature, and thus has academic legitimacy.²¹³ Second, it is consistent with the underlying economic realities of the communications industry, where marginal cost pricing is infeasible.²¹⁴ Third, it is a very good match for the problem at hand, where the sunset provision of Section 629(e) involves setting aside regulation, and explicitly requires the agency to consider the costs of intervention on both competition and the public interest. Fourth, the definition requires that there be some force operating on price sufficient to permit the removal of regulation.²¹⁵ Consistent with the “effective competition” standard in Section 623(l), that force could be the presence of a competitor serving some portion of the market and exerting downward pressure on prices or affecting quality or some other mode of rivalry. Fifth, by including the “need for government regulation” in the definition, the parameters of “fully competitive” can vary across issues, providing flexibility to the agency. Since the cost and benefits of regulation vary across interventions, the threshold level of “market forces” sufficient to make regulation unnecessary will not be uniform across all regulatory inter-

²¹⁰ *In re Comcast Cable Communications, LLC*, on behalf of its subsidiaries and affiliates; Petition for Determination of Effective Competition in Two Communities in Maryland, *Memorandum Opinion and Order*, 25 F.C.C.R. 13340, ¶ 12 (Sept. 21, 2010) (footnotes omitted).

²¹¹ See *infra* Section III; *Commercial Availability I*, *supra* note 13, ¶ 64.

²¹² Implicit is that market forces are sufficient to protect consumers and ensure just and reasonable rates.

²¹³ See KASERMAN & MAYO, *supra* note 189, at 100-01.

²¹⁴ See Ford & Spiwak, *The Impossible Dream*, *supra* note 166, at 9.

²¹⁵ Regulation may be too costly even in the presence of monopoly.

ventions.²¹⁶ Therefore, a finding of “fully competitive” for Section 629(e) need not translate to a finding of “fully competitive” in any other instance.

C. Satisfying the Statute

In order to sunset Section 629(a), Section 629(e) requires the Commission to make, at a minimum, a plausible argument that the market for multichannel video programming and the market for converter boxes and interactive equipment are “fully competitive.”²¹⁷ As noted above, for purposes of Section 629(e), we define “fully competitive” as a situation where market forces are sufficiently strong to eliminate the need for government regulation. We now discuss each determination in turn.

1. The Market for Multichannel Video Programming is “Fully Competitive” for Purposes of 629(e)(1)

Given our definition of “fully competitive,” the Commission could make several plausible arguments that the first prong of Section 629(e) is satisfied. In the *Navigation Devices Order*, the Commission did not finalize its position on a geographic market definition for MVPD services.²¹⁸ Yet, regardless of whether we assume for purposes of Section 629(e)(1) that the market for multichannel video programming is local or national,²¹⁹ there are at least two competitors in every market—satellite television (DirecTV and Dish) is essentially ubiquitous and is a very real and significant competitor in the market.²²⁰ The most recent *Video Competition Report*, which draws conclusions based on 2006 data, observes:

We find that almost all consumers are able to obtain programming through over-the-air broadcast television, a cable service, and at least two DBS providers. In some areas, consumers also may have access to video programming delivered by emerging technologies, such as digital broadcast spectrum, fiber-to-the-home facilities, or web-based Internet video.²²¹

Similarly, in the *National Broadband Plan*, the agency observed, “four out

²¹⁶ In Figure 1, different conclusions can be drawn by altering the size of **R**.

²¹⁷ See 47 U.S.C. § 549(a), (e).

²¹⁸ *Commercial Availability I*, *supra* note 13, ¶ 111.

²¹⁹ *Id.* (“[T]he relevant geographic market for assessing MVPD competition is local and its extent can be defined by the overlap of the ‘footprints’ of the various service providers.”).

²²⁰ See *In re Time Warner Cable Inc.; Time Warner Entertainment-Advance/Newhouse Partnership*; Petition for Determination of Effective Competition in Four Massachusetts Communities, 23 F.C.C.R. 6441, ¶ 5 (Apr. 14, 2008).

²²¹ See *In re Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, *Thirteenth Annual Report*, 24 F.C.C.R. 542, ¶ 4 (Nov. 27, 2007) [hereinafter *Thirteenth Annual Report*].

of the top 10 MVPDs are not cable companies and represent 41% of MVPD subscribers.”²²² Indeed, current conditions stand in stark contrast to when the FCC first issued its *Navigation Devices Order* back in 1998 where DBS was “still a relatively new entrant in the MVPD market”²²³ As such, customers have multiple choices of providers, and the number of choices is rising with the actual entry of telephone companies in many markets and over-the-top video services wherever broadband is available.²²⁴

While non-committal in defining local geographic markets in the *Navigation Devices Order*, the Commission suggested that Nielsen’s Areas of Dominant Influence, or Standard Metropolitan Statistical Areas could provide assistance in defining “appropriate geographic market definition[s].”²²⁵ These geographic areas are very similar to Nielsen’s Designated Market Areas (“DMAs”), for which we have competitive information.²²⁶ Recent evidence indicates that non-cable video delivery systems (or “alternative delivery systems” or “ADSs”) account for at least 15 percent market share of television households in 203 of the largest 210 DMAs, satisfying the “effectively competitive” standard of Section 623(l) for almost every U.S. household.²²⁷

A “fully competitive” finding in the MVPD market under Section 629(e) should not be problematic before a reviewing court. For example, in striking down the Commission’s *Cable Ownership Cap Rule*, the D.C. Circuit found, among other things, that DBS companies alone now serve approximately 33 percent of all subscribers (satisfying Section 623(l)(1)(B) if viewed at the national level),²²⁸ and DirecTV and Dish Network each serve more customers than any cable company with the exception of Comcast.²²⁹ Indeed, the court found that:

[T]he record is replete with evidence of ever increasing competition among video providers: Satellite and fiber optic video providers have entered the market and grown in market share since the Congress passed the 1992 Act, and particularly in recent years. Cable operators, therefore, no longer have the bottleneck power over pro-

²²² NATIONAL BROADBAND PLAN, *supra* note 3, at 51.

²²³ *Commercial Availability I*, *supra* note 13, ¶ 112.

²²⁴ *Cf.* NATIONAL BROADBAND PLAN, *supra* note 3, at 51, 67 n.116 (noting entry of Verizon Communications and AT&T to the MVPD market).

²²⁵ *Commercial Availability I*, *supra* note 13, ¶ 111.

²²⁶ *Geographic Definitions*, MARKETING SYSTEMS GROUP, <http://commcns.org/Xhsgd4> (last visited Nov. 10, 2012) (defining DMAs as “a geographic area that represents individual television markets as defined by Nielsen Media Research. DMA’s are typically defined by county and the market definitions are updated each fall by [Nielsen].”).

²²⁷ *ADS, OTA, and Wired-Cable Penetration by DMA*, TELEVISION ADVERTISING BUREAU, <http://commcns.org/Xhsn8o> (last visited Nov. 10, 2012). These markets include almost all United States households. *Local Television Market Universe Estimates*, NIELSEN COMPANY (Jan. 1, 2011), available at <http://commcns.org/XdKOKB>.

²²⁸ *Comcast Corp. v. FCC*, 579 F.3d 1, 6 (D.C. Cir. 2009).

²²⁹ *Id.* at 1, 8.

gramming that concerned the Congress in 1992.²³⁰

Since this sentiment was expressed before over-the-top video had become a serious contender in video distribution, it is not unreasonable to expect a willingness by the court to accept a finding of a fully competitive MVPD market.

Finally, given that Congress price deregulated cable programming above “basic tier” services in the 1996 Act,²³¹ we can also infer that Congress deemed the market for higher tier cable services to be “fully competitive” for purposes of Section 629(e). As observed at the time by Rep. Edward Markey,

The pending legislation will deregulate the rates of most cable systems 3 years from now—in March 1999. The rationale for deregulating cable systems at that point is due largely to the success of the Cable Act of 1992. . . . [The 1992 Act] gave emerging satellite competitors and others access to cable programming, making competition viable. I am encouraged by the progress that direct broadcast satellite companies and wireless cable companies are making in signing up customers and competing against incumbent cable operators.²³²

Thus, Congress, in the 1996 Act, determined that the multichannel video market was “fully competitive” in the sense that market forces were sufficiently strong to eliminate the need for government regulation for cable programming services.²³³ Representative Markey’s statement includes words like “emerging” and “progress,” suggesting that the deregulation was based on the belief that competitive alternatives would succeed going forward; if this was Congress’ belief, it has come to fruition. From 1995 to 2006, for example, direct broadband satellite services grew from 1.7 million to 28 million subscribers, the latter representing about 29 percent of all U.S. MVPD subscribers.²³⁴ More recent evidence indicates that DBS players control a thirty-three percent market share and “four out of the top 10 MVPDs are not cable companies and represent 41 percent of MVPD subscribers.”²³⁵

²³⁰ *Id.*

²³¹ 47 U.S.C. § 543(b).

²³² 142 CONG. REC. 1169 (1996) (statement of Rep. Ed. Markey supporting the conference report to S. 652).

²³³ Of course, Congress did leave the basic programming tier regulated subject to a subsequent determination that a particular franchise was subject to “effective competition.” Notably, the FCC has granted petitions of effective competition in over 7,000 cable systems, including many large cable systems. *See 2011 Report on Cable Industry Prices*, ¶ 14. Franchising authorities have chosen not to regulate basic tier rates in numerous other systems, providing further evidence of the competitive nature of the MVPD market across the country. *In re* Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992; Statistical Report on Average Rates for Basic Service, Cable Programming Services, and Equipment, *Report on Cable Industry Prices*, 12 F.C.C.R. 22,756, ¶ 13 & n.8.

²³⁴ *Compare In re* Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, *Second Annual Report*, 11 F.C.C.R. 2060, ¶ 49 (Dec. 7, 1995) (1.7 million DBS subscribers), with *Thirteenth Annual Report*, *supra* note 221, ¶ 75 (27.97 million DBS subscribers).

²³⁵ *Comcast Corp. v. FCC*, 579 F.3d 1, 6 (D.C. Cir. 2009); NATIONAL BROADBAND PLAN,

Based on this evidence and a sensible and well-documented definition of the term “fully competitive,” we believe that the Commission can make a positive determination that the market for multichannel video programming is “fully competitive” for purposes of Section 629(e). In so doing, the first-prong of the sunset provisions of Section 629(e) is satisfied.

2. The Market for Converter Boxes and Interactive Equipment is “Fully Competitive” for Purposes of 629(e)(2)

Again, under our standard, the market for converter boxes and interactive communications equipment used in conjunction with that service is *fully competitive* for purposes of Section 629(e) if there are market forces sufficiently strong to eliminate the need for government regulation. As with the first prong of Section 629(e), a finding by the FCC that the equipment market is “fully competitive” presents no difficulty. Recall that the 1998 *Navigation Devices Order* defined the equipment market to include any navigation devices subject to Section 629.²³⁶ Marketplace evidence reveals that there are a large number of sellers of converter equipment in such a market. Suppliers of set-top box equipment include, but are not limited to, Pace, Motorola, Cisco, Evolution Broadband, Samsung, Zoom, Panasonic, ARRIS, and Tivo.²³⁷ Further, there has never been, nor is there any proposal for, regulation of the equipment manufacturing industry. While it is true that Motorola and Cisco held a sizeable share of the set-top box market, emerging competition is substantially impacting sales by these firms.²³⁸ But, even if the two companies split the entire market, their rivalry would satisfy the 50-15 standard of 623(l)(1).²³⁹ Evidence of hit-and-run entry in the past suggests that the market share success of these companies may be largely due to superior efficiency and technology rather than any anticompetitive actions.²⁴⁰

supra note 3, at 51.

²³⁶ *Commercial Availability I*, *supra* note 13, ¶ 111.

²³⁷ *Comments of Nat’l Cable and Telecomm. Ass’n*, *supra* note 123, at 9 (“Cable operators now purchase set-top boxes from a growing number of consumer electronics manufacturers, including Pace, Motorola, Cisco, Evolution Broadband, Samsung, Panasonic, ARRIS, and TiVo.”).

²³⁸ Todd Spangler, *Cisco’s Cable Sales Get Hammered Set-Top Sales in North America Drop 40% Year-Over-Year*, MULTICHANNEL NEWS (Nov. 11, 2010), <http://commcns.org/13Iw7VU>; John Pletz, *Motorola Mobility’s Cable Set-Top Box Unit Losing Ground*, CRAIN’S CHI. BUSINESS (June 6, 2011), <http://commcns.org/YbNejz>; Jeff Baumgartner, *Samsung Boxes Break In at Cablevision*, LIGHT READING CABLE (Aug. 19, 2010), <http://commcns.org/VrucLz>.

²³⁹ 47 U.S.C. § 543(l)(1)(B).

²⁴⁰ Baumgartner, *supra* note 238. Hit-and-run entry requires low sunk entry costs, which permits firms to enter a market in pursuit of profits, and exit if profits turn out to be unavail-

Recent evidence indicates that industry concentration in the navigation devices market is falling rapidly.²⁴¹ A market survey by Infonetics Research, released in March 2011, provides market share data for the navigation devices market for the years 2008, 2009 and 2010.²⁴² This data is summarized in Table 1. Using the market share data from this report to compute an HHI for the industry in 2008 indicates something much like duopoly, where the HHI would be 5,000 if the firms were equal sized. In 2010, alternately, the HHI had fallen significantly, to the equivalent of just over five firms. Under the 2010 Merger Guidelines, the HHI is just above the threshold (1,500) for an “unconcentrated market.”²⁴³ A continued decline in industry concentration is expected, as cable operators—and consumers—further diversify their equipment supplier base. For example, TiVo entered into agreements to provide joint services with Comcast and DirecTV, and (other things constant) its market share is expected to rise as a result (subsequent to full implementation).²⁴⁴ In any case, the set-top market in the recent past, much less in the now distant past when the 1996 Act was written, is not the same market as today. The potential benefits from Section 629 are, consequently, much smaller, though there is little reason to suspect the costs of mandated technology standards have fallen.

able. The history of hit-and-run entry in the set-top market, by firms like Sony, could be used to suggest the converter box market is contestable, implying competitive outcomes even when only one or a few firms participate in the market. See William J. Baumol, *Contestable Markets: An Uprising in the Theory of Industry Structure*, 72 AM. ECON. REV. 1, 4 (1982).

²⁴¹ Note, however, that concentration does not directly map to competitiveness.

²⁴² *Cable, Satellite, IPTV, and OTT Set-Top Boxes and Subscribers, Quarterly Worldwide and Regional Market Share, Size and Forecasts, 4Q10*, INFONETICS RESEARCH (Mar. 16, 2011), <http://commcns.org/WKSZy2> (on file with *CommLaw Conspectus*).

²⁴³ UNITED STATES DEP'T OF JUSTICE & FED. TRADE COMM'N, *supra* note 209, at 18-19.

²⁴⁴ Full integration of the services remained “in process” as of the publication of this paper. See, e.g., Eric A. Taub, *Tivo and DirecTV Together Again*, N.Y. TIMES (Mar. 28, 2012), <http://commcns.org/XGY2IR>; Benny Evangelista, *TiVo-Comcast service mix finally happens – 7 years later*, SFGATE (Apr. 10, 6:30 PM), <http://commcns.org/XGY7FY>. See also *TiVo and Comcast Team Up to Offer the First Retail Cable Set-Top With DVR That Delivers Linear TV, Broadband Content and Xfinity On Demand Library All From One Box Comcast to Help TiVo to Promote Solution with Retail and Marketing Support*, PR-INSIDE (May 09, 2011, 2:38 PM), <http://commcns.org/102cgx6>; Press Release, DirecTV, DIRECTV and TiVo to Launch New HD DIRECTV DVR with TiVo Service (Sept. 3, 2008), available at <http://commcns.org/Vrv9dM>; Don Reisenger, *DirecTV TiVo DVR Delayed to 2011*, CNET NEWS (Oct. 4, 2010 12:37 PM), <http://commcns.org/Va0QuQ>.

Table 2. Concentration in the Navigation Devices Market

	2008	2009	2010
Revenue-based HHI	5,667	2,020	1,913
Unit-based HHI	5,475	2,417	1,849
Source: Infonetics Research (2011).			

Also, some cable operators are finding ways to deliver video without using a set-top box, utilizing software-based security and delivering content from the “cloud” to a variety of devices.²⁴⁵ Cablevision, for example, claims to have hundreds of thousands of customers using its network DVR service, which eliminates an operator-supplied DVR by moving the recording capability into the cloud.²⁴⁶ Similarly, Comcast’s Xfinity app for iPad allows users to both change channels and to stream TV shows and movies from Comcast’s On-Demand catalog directly to their iPad.²⁴⁷ The growing number of over-the-top Internet-video equipment, such as Roku, Boxee, Western Digital, Logitech, GoogleTV, and Apple TV, among others, may soon be a competitor of, rather than a complement to, traditional video services that require a set-top box.²⁴⁸ For example, one over-the-top video vendor states that thirty percent of its customers cancel cable service after using its service.²⁴⁹ So, while many MVPDs are using over-the-top video as a complement to their services and Internet-based video is not ideal for all types of content, over-the-top services may serve as a potential competitor to traditional video services for some custom-

²⁴⁵ See, e.g., Ryan Lawler, *Why Time Warner Cable Is Cutting Its Own Cord*, GIGAOM (Jan. 7, 2011, 8:17 AM), <http://commcns.org/102cLqY>; Steve Donohue, *The Disappearing Set-Top*, LIGHT READING CABLE (Apr. 26, 2011), <http://commcns.org/W9a2dG>.

²⁴⁶ *Is the Set-Top Box on its Way Out? Cable Executives Sound Off*, FIERCECABLE (Nov. 23, 2010), <http://commcns.org/WiS2yh>; Graeme McMillan, *Cablevision Launches iPad App Offering 300 Channels of Live TV*, TIME (Apr. 4, 2011), <http://commcns.org/UxfEm>.

²⁴⁷ Alan Henry, *Comcast Updates Xfinity App for iPhone, Adds On-Demand Streaming*, APPSCOUT (May 25, 2011, 7:56 PM), <http://commcns.org/13Ixzrg>; see also Kevin C. Tofel, *Qualcomm’s Wi-Fi Chip Could Turn Handhelds into a TV Set-Top Box*, GIGAOM (June 1, 2011, 11:15 AM), <http://commcns.org/VrvT2t>.

²⁴⁸ See Steve Smith, *Over-the-Top! 488 Million Households to be OTT-Capable by 2016*, VIDBLOG (June 3, 2011, 1:03 PM), <http://commcns.org/10hsSWD>; James K. Wilcox, *Samsung: Cable Without Set-Top Boxes Coming Via TV Apps?*, CONSUMERREPORTS.ORG (Jan. 11, 2011, 10:33 AM), <http://commcns.org/W9abhd>; Ben Drawbaugh, *Could This be the Year We Get to Ditch the Cable Box?*, ENGADGET (Jan. 9, 2011, 4:28 PM), <http://commcns.org/U4a4Gi>; Tirsina Radu, *Millions Ditch Cable for Netflix and Antennas*, TG DAILY (Apr. 11, 2011, 8:47 AM), <http://commcns.org/11CaWpP>.

²⁴⁹ Ryan Lawler, *30% of PlayOn Users Cut the Cord*, GIGAOM (Oct. 15, 2010, 9:00 AM), <http://commcns.org/11CaXKm>; Jon Orlin, *Comcast Reports Drop in Cable Subscribers*; John Orlin, *Blames Economy*, TECHCRUNCH (Oct. 27, 2010), <http://commcns.org/YbNY8r>.

ers. Since the traditional set-top box is a strong complement to cable service (i.e., the box has no independent value), to the extent that over-the-top video services add to the competition in the MVPD market, they likewise add to the competition in the set-top box market.²⁵⁰

In our interpretation of Section 629(e)(2), we do not require consumers to be direct participants in the equipment market, and for obvious reasons. While Section 629(a) does refer to “commercially availab[ility] . . . to consumers,” Section 629(e)(2) makes no reference “to consumers,” but addresses only competition generally.²⁵¹ Such differences in statutory language cannot be ignored. There is no linkage of “fully competitive” to the particular requirements in Section 629(a), and there is no mention of consumers in 629(e)(2).²⁵² Indeed, Congress expressed concern in Section 629(e)(3) that the provisions of Section 629(a) may impede competition,²⁵³ implying that the full implementation of 629(a) may be in conflict with the requirements of 629(e)(1) and (2).

Further, had Congress intended the “to consumers” element to apply in the sunset provision, it could have drafted the Act so that sunset was possible only after the full implementation of Section 629(a) as it did elsewhere in the Act.²⁵⁴ Consider, for example, the language in Section 401 of the Act governing regulatory forbearance.²⁵⁵ Congress specifically limited the FCC’s ability to forbear from certain parts of Section 251 and Section 271 of the 1996 Act, mandating that forbearance was not permitted until those requirements had been “fully implemented.”²⁵⁶ Section 629(e), however, contains no mandate for full implementation.²⁵⁷ In fact, it would not be possible to do so given Section 629(e)(3), which implies that full implementation may impede competition. If the MVPD market is competitive and the equipment market is competitive, then regulation is probably more harmful than helpful, even if consumers are unable to purchase set-top equipment directly from manufacturers. The statute reflects that intuition.

3. *Sunsetting 629 Would Both Promote Competition and the Public Interest*

The third leg of the sunset provisions requires that reduced regulation of the

²⁵⁰ For further discussion on the economics of complementarity of service and equipment, see George S. Ford, Thomas M. Koutsy & Lawrence J. Spiwak, *Consumers and Wireless Carterfone: An Economic Perspective*, PHOENIX CENT. POL’Y BULL NO. 21, Sept. 2008, at 5-9, available at <http://commcns.org/U4afkL>.

²⁵¹ 47 U.S.C. § 549(a), (e)(2).

²⁵² 47 U.S.C. § 549(e).

²⁵³ *Id.*

²⁵⁴ 47 U.S.C. § 160.

²⁵⁵ *Id.*

²⁵⁶ *Id.*

²⁵⁷ Compare 47 U.S.C. § 549(e) with 47 U.S.C. § 160.

video marketplace “promote competition” and be in the “public interest.”²⁵⁸ In our view, satisfying these standards is not a problem. For example, innovation in the set-top box, if important to consumers, is one means by which firms can compete. Commoditizing the technology, or hindering the freedom to innovate, may alter the nature—and impede the intensity—of competition. The point was not lost on Congress. Section 629(c) permits the agency to waive the regulatory requirements of Section 629(a):

[U]pon an appropriate showing by a provider of multichannel video programming and other services offered over multichannel video programming systems, or an equipment provider, that such waiver is necessary to assist the development or introduction of a new or improved multichannel video programming or other service offered over multichannel video programming systems, technology, or products.²⁵⁹

Thus, Congress recognized that under certain conditions, setting aside the rules may be “necessary to assist the development or introduction of a new or improved [services and technologies].”²⁶⁰ Eliminating regulation that deters innovation clearly serves the public interest.²⁶¹

Also, different delivery technologies may face different compliance costs with the regulation. If so, then relative prices may change, altering the competitive dynamic of the MVPD market. Moreover, Section 629(a) imposes a price regulation on *all* MVPDs (i.e., not just cable companies) with regard to the set-top box (i.e., no subsidies),²⁶² and the impact of this price regulation may differ across firms and technology types, altering the competitive dynamic.

But there is more: As noted above, even the Commission has conceded that its implementation of 629 has been a costly disaster, forcing operators and consumers to shoulder more than one billion dollars in costs without any discernible benefits.²⁶³ The agency also acknowledged that its rules would lead to increases in the prices for equipment, burdening consumers with the agency’s experimentation.²⁶⁴ Furthermore, in FCC rule waivers, the agency has explicitly

²⁵⁸ 47 U.S.C. § 549(e).

²⁵⁹ 47 U.S.C. § 549.

²⁶⁰ *Id.* § 549(c).

²⁶¹ See *In re Evolution Broadband, LLC’s Request For Waiver of Section 76.1204(a)(1) of the Commission’s Rules; Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, *Memorandum Opinion and Order*, 24 F.C.C.R. 7890 (May 28, 2009); *January Waiver Requests*, *supra* note 35, at 220; *June 2007 Waiver Requests*, *supra* note 35, at 11780; *Guam Cablevision Memorandum*, *supra* note 35, at 11747.

²⁶² 47 U.S.C. § 549(a).

²⁶³ George S. Ford & Lawrence J. Spiwak, *Outliving Its Usefulness: A Law and Economics Argument for Sunset of Section 629*, PHOENIX CENT. POL’Y BULL. NO. 29, June 2011, at 26, available at <http://commcns.org/VMFNN6>.

²⁶⁴ See *AllVid NOI*, *supra* note 2, at 4275, 4301 (statement of Comm’r Baker); see also *Commercial Availability III*, *supra* note 3, ¶ 14 (“[W]e recognize that mandating this approach could be costly for some cable operators.”); NATIONAL BROADBAND PLAN, *supra*

observed that relief render “substantial public interest benefits by significantly reducing costs”²⁶⁵ By extending the regulatory mandate to DBS providers, the cost of regulatory compliance rises.

If the FCC proceeds quickly to sunset Section 629, the public will also benefit sizably from the avoidance of stranded research, deployment, marketing, and other costs incurred to bring AllVid to fruition.²⁶⁶ Similarly, as few customers have adopted CableCard and manufacturers have largely ceased investing in the technology,²⁶⁷ a sunset of Section 629 today minimizes stranded costs and affects few, if any, consumers. Alternately, if the agency makes another go at Section 629, it forces MVPDs to incur significant costs and also encourages manufacturers and customers to make financial commitments to the Commission’s chosen standards. All of these commitments are technology-specific, and wasted if the agency’s scheme falters, which it is bound to do given the economics of the issue and the dynamic nature of the video industry at present.²⁶⁸ Yet, if manufacturers and consumers expect failure, then, based on the historical evidence, both may proceed cautiously with their commitments to CableCARD and AllVid. If so, then the expected benefits of the regulatory scheme will be reduced, but the implementation costs by the MVPD industry will not, since MVPDs must incur such costs for their own equipment and on behalf of their customers.²⁶⁹ Such hedging makes for an unfavorable cost-benefit analysis for Section 629.

Last, and certainly not least, putting an end to the Section 629 debacle is entirely consistent with the stated purpose of the 1996 Act, “to reduce regulation,”²⁷⁰ and President Obama’s recent Executive Order that called upon federal agencies to conduct a cost-benefit review of existing federal regulations²⁷¹ in order to eliminate those that are “excessive, inconsistent, and redundant.”²⁷² While the FCC, as an “independent” agency, is exempt from complying with

note 3, at 50-51.

²⁶⁵ *AllVid NOI*, *supra* note 2, ¶ 9.

²⁶⁶ Ford & Spiwak, *Outliving Its Usefulness*, *supra* note 263, at 26.

²⁶⁷ *Id.* at 26-27.

²⁶⁸ NATIONAL BROADBAND PLAN, *supra* note 3, at 50-52.

²⁶⁹ Ford & Spiwak, *Outliving Its Usefulness*, *supra* note 263, at 27.

²⁷⁰ Telecommunications Act of 1996, Pub. L. No. 104-104, pmbl., 110 Stat 56, 56 (codified at 47 U.S.C. § 609).

²⁷¹ Exec. Order No. 13,563, 76 Fed. Reg. 3821, 3822 (Jan. 18, 2011) (applying Order to “agencies” as defined in Exec. Order No. 12,866); Exec. Order No. 12,866, 3 C.F.R. 1925 (Sept. 30, 1993) (defining “agency” as those defined under 44 U.S.C. § 3502(1)). *But see* 44 U.S.C. § 3502(5) (including the FCC as within the definition of an “independent regulatory agency,” thus outside the scope of Exec. Order 13,563).

²⁷² Barack Obama, *Toward a 21st-Century Regulatory System*, WALL ST. J. (Jan. 18, 2011), <http://commcns.org/SQH8TY>; *see also* Elizabeth Williamson, *Obama Launches Rule Review, Pledging to Spur Jobs, Growth*, WALL ST. J. (Jan. 18, 2011), <http://commcns.org/11CbJRo>.

this directive, Chairman Julius Genachowski has wholeheartedly endorsed both the letter and the spirit of the President's directive.²⁷³ Surely, if ever there was a candidate to show that the Commission was truly committed to removing outmoded regulations, then ending the Commission's tortured fourteen-year experiment with Section 629 is a prime contender.

VIII. CONCLUSION

Where one stands depends on where one sits. We argue in this paper that the FCC needs to alter its perception on the proper implementation of Section 629 with this reorientation based on the economics of the multichannel video market and the role of the set-top box. Specifically, we argue that the common view that the set-top box is a tool by which multichannel video providers can extract surplus from consumers is invalid. Multichannel video providers, including cable companies, have no anticompetitive motivation with regard to the set-top box. In fact, multichannel video providers prefer the efficient outcome, and the interest of the MVPD and the consumer is common—cheaper, more innovative set-top boxes increase consumer valuations of multichannel video services and, in turn, increase profits. If a commercial market for such equipment is relatively more efficient than self-supply, then the multichannel video provider will embrace it, thus, increasing its profit while also increasing consumer welfare. Alternately, if self-supply is more efficient, then the multichannel video provider prefers self-supply—also to the benefit of consumers. The multichannel video provider has strong incentives to reduce the price and cost of converter equipment as well as to pursue value-enhancing innovation. Therefore, if we observe self-supply of set-top equipment, then the presumption should be that self-supply is relatively more efficient than a commercial market. It follows, then, that a regulation-forced commercial market for such devices is likely to produce higher prices and lower economic and consumer welfare.

We acknowledge that the Commission may sense some legal obligation to address the mandates of Section 629. That said, the agency retains the flexibility to either *minimize* or *maximize* its intrusion into the video marketplace. We argue that the FCC should consider, at least for a moment, that the dominance of self-supply in the set-top box market is a consequence of its relative efficiency. Economic logic provides some support for this view, thereby encouraging a more temperate implementation strategy, which means something unlike the heavy-handed AllVid approach. The additional fact that the video market is

²⁷³ Julius Genachowski, Chairman, Fed. Comm'n Comm'n, Address at the Broadband Acceleration Conference, at 4 (Feb. 9, 2011), *available at* <http://commcns.org/SQHoST>.

evolving at a rapid pace further supports a sober approach to Section 629.²⁷⁴ Regulations designed and implemented today will be archaic in the very near term.²⁷⁵

Like it or not, until the underlying economic reality changes, the FCC's anticipated aggressive approach to Section 629 is likely—as FCC Commissioner Robert McDowell notes—to keep the agency in “the Valley of Unattained Goals.”²⁷⁶ For this reason, we have presented in this paper plausible legal, economic, and evidentiary arguments on how the Commission can justify the sunset of Section 629, thereby purging from the policy debate the view that billions should be wasted on a futile task simply “because Congress told us to.”²⁷⁷ While we understand that the Commission has extended significant political capital in raising the AllVid issue both in the *National Broadband Plan* and in a subsequent *Notice of Inquiry*, initiating a formal *Notice of Proposed Rule-making* will set the agency on a course that, once started, will be difficult to reverse and could result in another CableCARD-like failure. Present market conditions in the multichannel video market, while not perfectly competitive in the textbook sense, are such that regulatory efforts are unlikely to create more benefits than costs. As a result, Section 629 has “outlived its usefulness” and should be put to bed.

²⁷⁴ *AllVid NOI*, *supra* note 2, ¶ 13 (stating that “delivery platforms continue to evolve at a rapid pace”).

²⁷⁵ *See, e.g.*, Commercial Availability *Fourth NPRM*, *supra* note 141, at 4328 (statement of Comm’r McDowell, stating that “technological innovation continues to outpace the government’s ability to keep up”).

²⁷⁶ *Commercial Availability III*, *supra* note 3, at 14,711 (statement of Comm’r McDowell).

²⁷⁷ *Id.*